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Infrastructure, environment, buildings

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ENVIRONMENT

Mr. Chris Sanders, P.E.
Chief, Environmental Compliance & Enforcement Division
MDEQ – Office of Pollution Control
Environmental Compliance & Enforcement Division
P.O. Box 2261
Jackson, Mississippi 39225-2261

Subject:
Response to Sludge Characterization and Bench Scale Treatability Report
Dated August 20, 2010
Hercules Inc. Hattiesburg Facility
Hattiesburg, Forrest County, Mississippi
Agency Interest No. 2022

Date:
7 January 2011

Contact:
John Ellis, PG

Extension:
208

Email:
john.ellis@arcadis-us.com

Our ref:
LA002999.0001.00001

Ashland/2999.1/C/1/kp

Dear Mr. Sanders:

ARCADIS U.S., Inc. (ARCADIS), on behalf of its client Hercules Incorporated, is pleased to submit this response to the Mississippi Department of Environmental Quality's (MDEQ's) letter dated November 10, 2010, for the above-referenced site. The comments in the NOD letter are noted below, with the responses following in bold type.

ITEM 1: MDEQ has some concerns associated with the proposed dewatering cell construction. Primarily, there are two issues that must be addressed in cell planning and construction before MDEQ provides more consideration for approval. First, the proposed plan suggests routing decanted water back into the existing impoundment. Whatever dewatering mechanism is employed, MDEQ will require that the decanted water be placed in a tank on-site and sampled prior to discharge to ensure its content falls within the limits of the existing pretreatment permit (i.e. contaminates and flow). MDEQ cannot approve any plan that provides for the decanted water to be put back through the impoundment itself. Further, if dewatering cells are used, MDEQ will expect for stormwater to be diverted from the dewatering cells. Second, MDEQ recognizes that the proposed method of dewatering has potential to generate significant off-site nuisance odors (the property line serving as the point of compliance). Hercules will be required to implement odor control measures to prevent off-site odors. Therefore, before MDEQ will consider approving on-site dewatering, Hercules must submit detailed plans to control odors. Several options were discussed in our meeting with ARCADIS.

RESPONSE: **Water entrained in the sludge will be separated from the solid portion by either gravity dewatering or mechanical dewatering. In the event that gravity dewatering is used, dewatering cells will be constructed with berms for run-on/run-off control of storm water as shown on the plans contained in Attachment A, the Impoundment Basin Decommissioning Work Plan (work plan). Dewatering cells will be constructed with in-ground sumps for the collection of separated water. Water that collects in the sump will be pumped into clean on-site aboveground storage tanks (ASTs) or frac tanks. If mechanical dewatering is selected, the effluent from the dewatering operation will be piped to empty on-site ASTs or frac tanks.**

When each AST and/or frac tank is full, water samples will be collected and shipped to an analytical laboratory under proper chain-of-custody procedures. The samples will be analyzed for the parameters contained in Hercules' existing MDEQ Pretreatment Water Discharge Permit (MSP091286, Permit). A listing of each permitted parameter and its discharge limit is contained in Attachment B.

The results of any detection will be compared to the pounds per day discharge limit for that chemical. Based on the total volume of water contained in the AST or frac tank, an acceptable discharge rate that will not allow any parameter to exceed its permit limitation will be determined. If necessary, the pH of the sampled water will be adjusted prior to discharge to comply with the pH range contained in the Pretreatment Permit. Water will then be discharged to the POTW at a rate equal to or lower than the predetermined rate.

It should be noted that none of the AST and/or frac tank sampling that will be collected during the proposed sampling events will take the place of routine sampling required by the Permit.

Nuisance odors will be mitigated through the use of foam or odor suppressants (deodorant) as determined by the ENGINEER and CONTRACTOR. Sludge will be treated with one or both of these substances at a point in the sludge treatment train after initial Toxicity Characteristic Leaching Procedure (TCLP) samples are collected for characterization purposes.

ITEM 2: Hercules must submit a complete permit modification request for the existing Pretreatment Permit No. MSP091286 to reflect a dewatering operation and subsequent discharge of resulting decant.

RESPONSE: **After award of the project and prior to implementation of the decommissioning plan, Hercules will submit supplemental information to MDEQ that describes the selected dewater process (i.e. gravity or mechanical) for inclusion in the Permit. No other aspects of the Permit will be requested to be revised. Once MDEQ approved the inclusion of the supplemental information, Hercules will communicate with the POTW so they are aware of the decommissioning activities.**

ITEM 3: As sludges are removed from the impounding basin into the individual dewatering cells (if this method of dewatering is approved), representative composite sample(s) must be collected for each cell. If analyses of the sample(s) indicated levels below applicable TCLP disposal standards, then once the material has been dewatered to the point it passes a paint filter test, it may be disposed of as non-hazardous waste at a municipal solid waste landfill. Should the sample(s) fail TCLP disposal standards prior to dewatering, then additional composite sample(s) will be required from the dewatered sludge to ensure proper disposal. Land Disposal Restrictions (LDR) will apply to these sludges. Proposed sampling procedures and frequencies must be provided by Hercules for MDEQ review and approval.

RESPONSE: **One composite sample will be collected for every approximately 300 cubic yards of sludge transferred from the IB for processing. A flow chart showing when TCLP sampling will be conducted is included as Appendix B of the work plan. Based on dewatering to 33 percent solids each composite sample will represent approximately 100 cubic yards of dewatered material. Each composite sample will consist of six, 1 liter aliquots of sludge (1 per 50 cubic yards). Once the total sample volume is collected, the composited sludge will be thoroughly mixed in a clean 5-gallon plastic bucket. The sample will be containerized and submitted to an analytical laboratory for TCLP–Volatile Organic Compounds. An effort will be made to segregate the sludge represented by each TCLP sample from other sludges in the gravity dewatering cells, or roll-off containers that will be used to store mechanically dewatered sludge.**

Information on the groundwater plume and its interaction with the City of Hattiesburg sewer system will be addressed in a separate document. Submittal of this information will not delay the finalization of the work plan.

Closing

If there are any questions concerning this response, please contact Mr. Tim Hassett with Ashland at (302) 995-3456 or Mr. Ellis at (225) 292-1004.

Sincerely,

ARCADIS U.S., Inc.

Craig A. Derouen, P.E.
Senior Engineer

John Ellis, P.G.
Principal Scientist/Geologist

James J. Reid, P.E.
Principal-in-Charge

GHC:jk

Attachments

Copies:
Bruce Hough, Hercules
Tim Hassett, Hercules

ARCADIS

Attachment A

Impoundment Basin
Decommissioning Work Plan

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Imagine the result

HERCULES

Impoundment Basin Decommissioning Work Plan

Hattiesburg, Mississippi

7 January 2011

ARCADIS

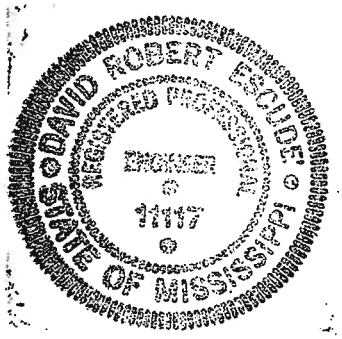
Impoundment Basin Decommissioning Work Plan

Hattiesburg, Mississippi

Craig A. Derouen, P.E.
Senior Engineer

John Ellis, P.G.
Principal Scientist/Geologist

David R. Escudé, P.E.
Vice President/Principal Engineer



Prepared for:
Hercules Incorporated

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Our Ref.:
LA002999.0001.00001

Date:
7 January 2011

Table of Contents

1. Introduction

ARCADIS U.S., Inc. (ARCADIS), on behalf of Hercules Incorporated, (Hercules), submitted the *Sludge Characterization and Bench Scale Treatability Report* (C&T Report) dated August 20, 2010 to the Mississippi Department of Environmental Quality (MDEQ). MDEQ sent Hercules comments to the C&T Report in a letter dated November 10, 2010. This Impoundment Basin (IB) Decommissioning Work Plan (work plan) incorporates the MDEQ comments.

The C&T Report presents the results of a bench scale treatability effort conducted to determine an effective and implementable strategy for decommissioning of the on-site impoundment basin located at Hercules' 613 West 7th Street facility in Hattiesburg, Mississippi (Figure 1). The C&T Report indicated that the approximately 4,700 cubic yards of untreated sludge contained in the IB can be gravity or mechanically dewatered. The dewatered sludge would then be tested to determine an appropriate offsite disposal option. Upon the removal of the IB sludge, the open excavation will be backfilled to the surrounding grade with "clean" backfill. In the event that another viable method of implementing gravity or mechanical dewatering is identified by an implementation contractor as more cost effective, Hercules may implement that option to decommission the IB. This work plan presents the methodology for implementing the decommissioning of the IB using gravity and mechanical dewatering; however, only one of these technologies will be implemented.

2. Decommissioning Method

2.1 Pre-Decommissioning Activities

The current MDEQ Water Pollution Control permit (Permit, Permit No. MSP091286) allows for the discharge of water that originates from the IB to the City of Hattiesburg Publicly Owned Treatment Works (POTW). Prior to implementation of this decommissioning plan by gravity or mechanical dewatering, supplemental information consisting of a description of the selected dewatering process (i.e. gravity or mechanical) will be submitted to MDEQ for inclusion in the Permit. No other aspects of the Permit will be requested to be revised. Once MDEQ approves the inclusion of the supplemental information, Hercules will communicate with the POTW so they are aware of the decommissioning activities.

Free standing liquids in the IB may be discharged until a minimum of 6 inches of water remains over the sludge. Prior to implementation of the decommissioning, an

approved waste disposal profile will be obtained from the Pine Belt Regional Landfill (landfill) in Ovett, Mississippi using the current sludge data. Dewatered sludge that is non-hazardous as determined by the procedures contained in Section 2.5 of this work plan will be disposed of at this facility. Hazardous waste will be profiled and disposed of at a facility permitted to receive hazardous waste.

2.2 Gravity Dewatering

The procedures contained in Section 2.2 will be used, if gravity dewatering is selected as the technology to be implemented to dewater the sludge contained in the IB.

2.2.1 Dewatering Cell Construction

Treatment of the IB sludge by gravity dewatering will be accomplished at the Hercules facility. Dewatering cells will be constructed on available open space in the vicinity of the IB. It is anticipated that decommissioning can be implemented at the dewatering cell locations shown on the project plans included in Appendix A. All dewatering and staging areas shown are available for use; however, only those areas that are needed will be used.

The subgrade for each dewatering cell will be prepared in accordance with the project plans and technical specifications (Appendix A) by using soil from the existing backfill stockpile located west of the IB. This material will be placed and graded at a 2 percent slope to promote drainage of the water from the sludge into the sumps shown on the project plans. An approximately 24-inch soil berm will be built to surround each dewatering cell. The purpose of the berm is to maintain separation between storm water that falls within the dewatering cells and storm water that does not. The exterior and interior berms of the prepared subgrade will be lined with a 20-mil plastic liner (high density polyethylene [HDPE], or approved equivalent). A geosynthetic drainage composite (GDC) will be placed over the plastic liner. Both the plastic liner and GDC will be placed so that gravity drainage allows water released from the sludge to flow into the sump. To protect the liner and GDC, 6 inches of sand will be placed over the GDC. Sludge will be placed on top of the sand layer and allowed to drain.

2.2.2 Dewatering Methodology

Sludge will be pumped or removed from the IB with an excavator, or other mechanical means, and placed onto the upper surface in each dewatering cell. Each area will be filled to within 6 inches of the top of the berm. The West area and South area have an

estimated untreated sludge capacity of 423 and 974 cubic yards, respectively. Water that accumulates in the dewatering cell sumps will be pumped to available empty on-site tanks within the facility or frac tanks. The sludge will be allowed to dewater until it passes the Paint Filter Liquids Test (PFLT, USEPA Method 9095A). Multiple applications of sludge to each cell will be necessary to dewater the entire volume of sludge in the IB. In the event that the primary decommissioning method cannot be implemented or is not effective at achieving sufficient dewatering to pass the Paint Filter Liquids Test, the partially dewatered IB sludge will be solidified with Portland cement or quick lime (Appendix A) and transported offsite for disposal. The dewatered sludge will be loaded for offsite transport to Pine Belt Regional Landfill, a municipal solid waste landfill site in Ovett, Mississippi. Prior to disposal at the landfill, an approved profile will be obtained.

Sludge will be removed from the IB until visual evidence indicates that all sludge has been removed and native soil remains on the bottom of the IB. An additional 6 inches of native soil from the bottom of the IB may be removed, dewatered, transported, and disposed of at the landfill as part of this sludge removal process. If some of the material removed from the IB is determined to be hazardous waste, these wastes will be profiled and disposed of at a facility permitted to receive hazardous waste.

The generated liquid effluent will be collected in each dewatering cell's sump and pumped to on-site storage. On-site storage will consist of available empty facility tanks or rented frac tanks. Samples of the stored water will be collected and submitted to an analytical laboratory. The samples will be analyzed for the parameters contained in the facility's Permit. The analytical results will be used to calculate a discharge flow rate to the facility's permitted industrial sewer outfall that will not exceed the pounds per day limits contained in the Permit. The industrial sewer system is currently covered by the Permit.

2.3 Mechanical Dewatering

The procedures contained in Section 2.3 will be used, if mechanical dewatering is selected as the technology to be implemented to dewater the sludge contained in the IB.

2.3.1 Dewatering Equipment Staging

In the event that mechanical dewatering is selected as the dewatering technology to be implemented, contracted equipment will be mobilized to the site. The staging areas

shown in the plans will be utilized as the primary dewatering areas. Mechanical dewatering units will be powered by facility power or a portable generator, if the current configuration of facility power is insufficient.

2.3.2 Dewatering Methodology

Raw sludge will be pumped either directly to the unit or placed into a feedstock equalization container prior to introduction into the dewatering equipment. Any reagent additions, if required to enhance dewatering, will be added to the sludge prior to introduction into the equipment. Mechanical dewatering operations may be conducted 24 hours per day until all of the IB sludge has been dewatered. The sludge will be dewatered until it passes the PFLT. It is not expected that any solidification reagents will be required to pass the PFLT.

The solidified sludge will be placed in roll-off containers and staged for disposal pending the results of the analyses described in Section 2.5. The dewatered sludge will be loaded for offsite transport to Pine Belt Regional Landfill, a municipal solid waste landfill site. Prior to disposal at the landfill facility, an approved profile will be obtained.

The generated liquid effluent will be pumped to on-site storage. On-site storage will consist of available empty facility tanks or rented frac tanks. Samples of the stored water will be collected and submitted to an analytical laboratory. The samples will be analyzed for the parameters contained in the facility's Permit. The analytical results will be used to calculate a discharge flow rate to the facility's permitted industrial sewer outfall that will not exceed the pounds per day limits contained in the Permit. The industrial sewer system is currently covered by the Permit.

2.4 Air Monitoring and Odor Mitigation

Air monitoring will be conducted for the duration of sludge handling and dewatering activities. Due to the benzene and sulfur content in the sludge and sulfurous nature of the odors encountered during the collection of sludge samples for characterization and bench-scale treatability activities conducted for the C&T report, the air monitoring program will focus on benzene and sulfur containing compounds.

The sulfur compound most commonly measured is hydrogen sulfide (H_2S). According to the on-line NIOSH Pocket Guide to Chemical Hazards (http://www.cdc.gov/niosh/npg/npgd0337.html) H_2S is a colorless gas with a strong odor of rotten eggs. Because the sense of smell becomes fatigued to the smell of H_2S,

meters will be used to monitor its presence in the breathing zone of site workers. The OSHA Permissible Exposure Limit (PEL) is 20 parts per million (ppm) with a 50 ppm, 10 minute maximum peak (1 ppm H_2S = 1.40 mg/m^3). H_2S is flammable with a lower explosive limit (LEL) of 4 percent. Monitoring for both the PEL and LEL will be conducted. Procedures to protect workers when concentrations above the PEL or LEL are encountered will be detailed in the health and safety plan developed for this project.

In addition to site worker monitoring, fence-line monitoring for H_2S will be conducted. Because sludge will not be disturbed when workers are not present, it is not anticipated that H_2S concentrations would increase when the sludge is in a quiescent condition during gravity dewatering. Fence-line monitoring for H_2S will be conducted only during active site operations.

In addition to conducting quantitative monitoring for H_2S, qualitative odor monitoring will be conducted at the fence-line. It should be noted that the detection of the presence of nuisance odors is a subjective exercise. In the event that sludge odors are noted at the nearest downgradient fence line, the sludge will be treated by the application of a foam odor suppressant to the exposed sludge surface areas or the addition of a deodorant to the sludge. Currently available commercial foam application systems can supply a foam barrier that lasts from 12 hours to 180 days. The selection of a foam product with an appropriate duration of effectiveness will be determined in the field based on the actual length of time needed to accomplish sufficient dewatering. Foam application may be applied after sludge has been either placed on a dewatering cell or solidified sludge after it has been mechanically dewatered and placed in a roll-off container. Deodorant, if used, will be applied to the sludge after it is removed from the IB. A mixer may be used to mix the deodorant with the sludge as it is being transferred from the IB to the dewatering cells or mechanical dewatering equipment. The dosage of foam and deodorant will be monitored and adjusted as needed to suppress the perception of odor at the nearest downgradient fence line.

2.5 Sludge Characterization for Offsite Disposal

Sludge sampling will be conducted for waste characterization purposes as sludge is removed from the IB and placed on gravity dewatering cells or before it enters mechanical dewatering equipment. In addition, the composite sludge samples will be collected from a sample point prior to the introduction of foam or deodorant odor suppressants. One composite sample will be collected for every approximately 300 cubic yards of sludge transferred from the IB for processing. Each composite sample will consist of 6 grab, 1 liter aliquots of sludge (1 per 50 cubic yards). Once the

total sample volume is collected, the composited sludge will be thoroughly mixed in a clean 5-gallon plastic bucket. The sample will be containerized and submitted to an analytical laboratory for Toxicity Characteristic Leaching Procedure (TCLP) – Volatile Organic Compounds (VOCs),. An effort will be made to segregate the sludge represented by each TCLP sample from other sludges in the gravity dewatering cells, or roll-off containers that will be used to store mechanically dewatered sludge.

If the TCLP sample results are less than or equal to the RCRA toxicity characteristic (TC) levels, indicating that the waste is non-hazardous, no additional analytical testing will be conducted for those sludges. Once dewatered, that sludge will be disposed of at a municipal solid waste landfill.

If the TCLP results exceed the TC criteria, Land Disposal Restrictions will apply to this sludge. Once this sludge is dewatered, six sample aliquots from the dewatered sludge will be composited and submitted for TCLP analysis. The final disposal of the sludge will be determined after the results of the TCLP analysis are received. The dewatered sludge will be disposed of at a permitted facility. A flow chart showing the proposed sludge sampling procedure is included in Appendix B.

2.6 Confirmatory Sludge Removal Sampling

Once the sludge has been removed from the IB, eight confirmatory samples from the floor of the IB will be collected. Sidewall confirmatory sampling will not be conducted because the wooden sidewalls will not be removed from the IB once sludge is removed. The confirmatory samples will be submitted to an analytical laboratory and analyzed for VOCs by USEPA Method 8260B and Resource Conservation and Recovery Act 8 metals by USEPA Method 6010/7470. The sample results will be compared to the MDEQ Tier 1 Target Remediation Goal (TRG) standards for restricted soils.

If the confirmatory samples are collected in native soil within the first encountered groundwater zone and the reported concentrations exceed the TRG, no additional soil sampling or excavation will be conducted. This is because the soil samples will be representative of impacted groundwater, which would bias the results. The excavation will be backfilled and the groundwater in the vicinity of the filled IB will continue to be managed as an impacted groundwater zone.

2.7 Backfill Activities

Once it has been confirmed that the sludge has been removed from the IB, the dewatering cells, if constructed, will be removed. The sand layer, GDC, and HDPE liner will be disposed of at the landfill. The soils used to construct the subgrade and berms for the dewatering cells will be excavated and used as backfill material, along with any soil remaining in the stockpile west of the IB. Once these sources have been depleted, additional fill will be imported and placed in the IB. Dewatering of the IB will be conducted concurrently with backfilling, if necessary.

2.8 Site Restoration

The filled IB and any other disturbed areas (soil stockpile and dewatering cells, if constructed) will be graded to promote positive drainage to existing surface water conveyances. The disturbed areas will be seeded with a native grass species and fertilized in accordance with the technical specifications included in Appendix A. After fertilization, all project equipment will be demobilized from the site.

3. Reporting

Upon completion of decommissioning activities, a Decommissioning Certification Report will be submitted to MDEQ. The report will document the activities undertaken to decommission the IB and request no further action status for the IB sludge.

4. Post-Decommissioning

Post-decommissioning activities related to the IB sludge are not anticipated because of the removal action. The on-site groundwater monitor wells currently surrounding the IB will be left in place to facilitate future groundwater monitoring activities conducted under the Restrictive Use Agreed Order in place for this property.

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Figure

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Appendix A

Technical Specifications and Plans

HERCULES INCORPORATED

DRAFT

TECHNICAL SPECIFICATIONS AND CONSTRUCTION DRAWINGS FOR THE IMPOUNDMENT BASIN DECOMMISSIONING

HERCULES INCORPORATED
HATTIESBURG, MISSISSIPI

ARCADIS
Infrastructure, environment, buildings

ARCADIS

Craig A. Derouen, P.E.
Senior Engineer

John Ellis, P.G.
Principal Scientist/Geologist

David R. Escudé
Vice President/Principal Engineer

DRAFT
Technical Specifications and Construction Drawings for the Impoundment Basin Decommissioning

Hattiesburg, Mississippi

Prepared for:
Hercules Incorporated

Prepared by:
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge
Louisiana 70816
Tel 225 292 1004
Fax 225 218 9677

Our Ref.:
LA002999.0001.00001

Date:
6 January 2011

DRAFT
TECHNICAL SPECIFICATIONS
HERCULES INCORPORATED
IMPOUNDMENT BASIN DECOMMISIONING
TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 SCOPE OF WORK - DEWATERING AND OFF-SITE DISPOSAL

A. The Scope of Work includes, but is not limited to, furnishing all labor, methods, services, materials, tools, machinery, and equipment necessary for the construction of the Work as specified herein and shown on the Drawings.

B. Section 1.01a is intended to outline the Scope of Work and is not to be taken as complete in all respects. CONTRACTOR shall provide all necessary labor, materials, equipment, tools, utilities, and protective equipment as required to effect a complete and finished job, acceptable to OWNER and in compliance with all applicable local, state, and federal codes. Work under this Contract Document includes, but is not limited to, the following items:

1. Mobilization/demobilization;
2. Site preparation;
3. Gravity dewatering of the Impoundment Basin, if selected;
4. Mechanical dewatering of the Impoundment Basin, if selected;
5. Possible Gravity Dewatering of the Impoundment Basin material, if needed;
6. Loading and transportation of dewatered material to the Pine Belt Regional Landfill in Ovett, Mississippi;
7. Excavation of up to 6 inches of underlying native soils and transportation to the Pine Belt Regional Landfill in Ovett, Mississippi;
8. Removal/plugging of underground discharge piping as shown on the Drawings;
9. Backfill of the Impoundment Basin to elevations shown on the Drawings;
10. Site grading as shown on the Drawings;
11. Installation of vegetation on all disturbed areas; and
12. Site restoration.

1.02 JOB CONDITIONS

A. Site Access and Work Areas

Drawings, as referenced in this Specification, depict the location of the Work site. It is CONTRACTOR's sole responsibility to use and maintain present access. Any access

roadways, storage areas, work areas, or other areas that CONTRACTOR must use are CONTRACTOR's sole responsibility to keep passable at CONTRACTOR's cost. CONTRACTOR fully understands that certain designated access roadways must be used by OWNER to maintain access to Work areas; CONTRACTOR shall cooperate with OWNER in the maintenance of these common access roadways.

B. Night and Sunday Work

With approval by OWNER, Work can be done 24 hours per day/7 days a week for mechanical dewatering activities. All other Work can be conducted between the hours of 7:00 a.m. and 5:00 p.m. on Monday through Saturday. If Work is conducted on OWNER Holidays, a written request shall be given to OWNER at least 24 hours in advance of the beginning of performance of such Work. Work done at night shall only be done in a satisfactory and safe, first-class manner. Good lighting and all other necessary facilities for carrying out and inspecting the Work shall be provided and maintained by CONTRACTOR at all points where such Work is being done. CONTRACTOR shall provide a written request for any Work hours outside of the schedule presented within this Section.

C. Work in Bad Weather

During freezing, stormy, or inclement weather, no Work shall be performed by CONTRACTOR except such as can be done satisfactorily per manufacturer's and industry standard, these Specifications, and in a manner to secure safe, first-class construction throughout.

1.03 CODES AND STANDARDS

A. The Work shall adhere to all applicable federal, state, and local rules and regulations, including, but not limited to, regulatory requirements presented in Section 01060 - REGULATORY REQUIREMENT AND RESPONSIBILITY TO THE PUBLIC and shall conform to the codes and standards presented in Section 01070 - STANDARDS, which are described elsewhere in these Specifications.

1.04 QUALITY ASSURANCE

A. In accordance with Section 01400 - QUALITY CONTROL.

1.05 COOPERATION

(Not Used)

1.06 CARE AND STORAGE OF MATERIALS

A. Unload, inspect, and store all equipment and material items delivered to the Work site for the Work, including items supplied by OWNER.

B. Replace at CONTRACTOR's sole expense all OWNER and CONTRACTOR furnished materials damaged during unloading and storage, damaged by weather, or damaged by any other cause.

C. CONTRACTOR shall follow all applicable manufacturers' instructions for handling and storage of materials and/or equipment.

1.07 CONTRACTOR'S RESPONSIBILITIES AND WORK

A. Furnish all construction equipment, machines, tools, materials, field toilets, decontamination equipment, personal protective equipment, and other services. All supplies, labor, and supervision that are necessary to complete the Work and requirements as described or implied in these Specifications, Drawings, and the Contract Documents shall be CONTRACTOR's full responsibility.

B. No housing facilities shall be permitted on the Work site or on other OWNER property.

C. Maintain the site of its activities completely free of refuse and debris at all times. Promptly comply with any directives from OWNER regarding housekeeping. Upon completion of the Work and before final payment, completely remove all tools, equipment, supplies, materials, structures, and debris from the Work site and leave the premises clean.

1.08 WORK BY OTHERS

(Not Used)

PART 2 - PRODUCTS

2.01 REGISTERED TRADE NAMES

A. Products are referenced and specified throughout these Specifications by registered trade names. This does not constitute a recommendation of these products to the exclusion of other products. Equivalent products may be used upon receiving approval of OWNER.

B. The reference to registered trade names establishes a standard of required function, dimension, appearance, and quality of the required equipment, materials, or products.

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01014
WORK SEQUENCE

PART 1 - GENERAL

1.01 CONSTRUCTION SCHEDULE

A. CONTRACTOR is referred to the General Conditions section of the Contract Documents for additional scheduling requirements.

1.02 WEATHER

A. Take all necessary precaution for adverse weather so that the Work may be properly performed and be satisfactory in all respects. During cold weather, materials shall be preheated, if required, and the materials and structure into which they are to be incorporated shall be kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Heating shall be by an approved method and shall result in the appropriate atmosphere required for the Work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

1.03 PROGRESS REPORTS

A. Submit to OWNER every week following written issuance of a Notice to Proceed a report, in form and substance satisfactory to OWNER, stating the progress being made in fulfillment of this Contract and indicating the progress to date with respect to the Construction Schedule. Included with the report shall be an updated schedule indicating scheduled durations, scheduled start dates, scheduled completion dates, actual durations, actual start dates, and actual completion dates of construction activities identified in the initial approved Construction Schedule. This schedule shall be displayed in the Work site office trailer at all times.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION
(Not Used)

END OF SECTION

SECTION 01060
REGULATORY REQUIREMENT AND RESPONSIBILITY TO THE PUBLIC

PART 1 - GENERAL

1.01 REGULATION

A. Give all necessary notices, obtain all permits, and pay all fees and other costs in connection with the Work; file all necessary plans, prepare all documents, and obtain all necessary approvals of all governmental departments having jurisdiction. CONTRACTOR shall obtain all required Certificates of Inspection and approval for the Work and deliver these documents to OWNER, except as expressly noted in the Contract Documents.

B. Include in the Work, without extra cost to OWNER, labor, materials, services, and drawings required to comply with all applicable laws, ordinances, rules, and regulations, whether or not shown in the Contract, Specifications, or Drawings or specified.

C. The Work shall be performed in accordance with all applicable federal, state, local, and municipal laws, ordinances, rules, and regulations.

1.02 RESPONSIBILITY TO THE PUBLIC

A. Traffic

1. Construction operations shall be programmed and conducted to maintain adequate highway and pedestrian traffic within and adjacent to the site, including but not limited to the following for the Work duration: flagmen and watchmen, furnishing, erecting and proper maintenance, removal, and disposal of traffic controls.

2. Construction operations shall be programmed and conducted not to impede upon the daily operations of OWNER. A minimum of one ingress and egress route shall be maintained and passable at all times.

3. Pedestrian access to abutting properties and vehicular access for ambulances, police, and fire or other emergency equipment shall be maintained at all times. When vehicular access is temporarily curtailed, it shall be CONTRACTOR's responsibility to give adequate notice to affected parties including but not limited to the police department having jurisdiction for the site, fire department and emergency ambulance services prior to impairing access, and to provide means of temporary access when and if required.

4. When traffic is interrupted, every effort shall be exercised to restore normal traffic as soon as practicable.

5. Furnishing, erecting, proper maintenance, relocation, removal, and disposal of necessary signs, barricades, cones, warning lights, and other traffic controls shall be in accordance with local requirements and ordinances.

B. Sanitary Provision

1. CONTRACTOR shall provide all required adequate sanitary facilities, per local and federal regulations. Such facilities shall include, but not be limited to, restrooms, washrooms, and showers. Such facilities shall be made available when the first employees arrive on site for the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required or approved.

2. CONTRACTOR shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. CONTRACTOR shall rigorously prohibit the committing of nuisances on the site of the Work or on adjacent property.

C. Protection of Property

1. All property along the line of the Work, or which is in the vicinity of, or is any way affected by the Work shall be protected and preserved from damage by CONTRACTOR. Trees, fences, water or gas pipes (pipeline owner shall be notified when Working near line), sewers, drains, conduits, poles or wires for electrical purposes, railways, or other structures shall not be moved without consent of the persons owning or controlling them; and in crossing or working near them, they shall be sustained securely in place and shall be so treated as to render their condition as efficient and permanent as before.

2. Property damaged shall be immediately repaired and restored at the expense of CONTRACTOR, or if required, CONTRACTOR shall make the necessary repairs. In case of failure on the part of CONTRACTOR to restore such property, OWNER will have repairs made and any cost thereof will be deducted from payments due or which may become due to CONTRACTOR under this Contract.

D Existing Utilities

When excavating in close proximity of a utility or structure, OWNER shall be notified thereof sufficiently in advance so that OWNER may accomplish any special protective measure CONTRACTOR or OWNER deems necessary. Construction operations shall be so conducted as to facilitate access to utility structures by OWNER.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION
(Not Used)

END OF SECTION

SECTION 01070
STANDARDS

PART 1 - GENERAL

1.01 ACRONYMS

Where acronyms of the following organizations or any other standards, codes or specifications are referred to in the Specifications, the reference is to the particular standards, codes, or specification cited, together with all amendments applicable at the date of the opening of Bids; and shall apply except to the extent that said standards, and requirements may be in conflict with applicable laws or ordinances.

Acronym	Organization
AASHTO	American Assn. of State Hwy. & Trans. Officials
ACI	Alley Casting Institute or American Concrete Institute (as applicable)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASC	Adhesive and Sealant Council
ASCE	American Society of Civil Engineers
ASM	American Society for Metals
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
AWS	American Welding Society
CFR	Code of Federal Regulations
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, U.S. Dept. of Commerce
EIA	Electronic Industries Association
ETL	Electrical Testing Laboratories, Inc.
Federal	Federal Government Specifications
IEEE	Institute of Electrical and Electronics Engineers
MBMA	Metal Building Manufacturers Association
NEMA	National Electrical Manufacturers Association
NRMCA	National Ready Mix Concrete Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
POTW	Publicly Owned Treatment Works
PS	Product Standard
SJI	Steel Joist Institute
SSPC	Steel Structures Painting Council
UL	Underwriter's Laboratories, Inc.
USEPA	United States Environmental Protection Agency

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Materials, equipment, workmanship, design, and arrangement of all Work performed under this Contract shall be subject to the approval of OWNER.

B. Work Included:

1. Procedures for submittal to OWNER of List of Submittals, certificates and affidavits, samples for testing, material test results, Shop Drawings, operation and maintenance literature, and other miscellaneous data for approval.

2. Procedures for turnover of CONTRACTOR prepared "As-built" Drawings.

PART 2 - PRODUCTS

2.01 LIST OF SUBMITTALS

A. Within 4 days after the Contract is executed, CONTRACTOR shall furnish OWNER with a List of Submittals.

B. The List of Submittals shall indicate all products which CONTRACTOR believes will be incorporated in the Work. Omission from this list of any equipment, material, or product required by the Specifications shall not relieve CONTRACTOR of the Contract requirements for providing the equipment, materials, or products and completing the associated Work as specified.

C. For each entry of the List of Submittals, reference to the Specifications shall be made, along with an indication of the type of submittal(s) which CONTRACTOR plans to make to OWNER. More than one type of submittal may be required. OWNER will approve the types of submissions offered, or request additional or alternative submissions. Types of submissions are listed below:

1. Certificate(s) and Accompanying Affidavit.

2. Shop Drawings.

D. For each item on the List of Submittals, CONTRACTOR shall indicate the proposed source of supply or manufacturer for that entry.

E. OWNER will review CONTRACTOR's proposed source of supply or manufacturer for each entry. OWNER will return the List of Submittals with any objections to CONTRACTOR within seven calendar days after OWNER's receipt thereof.

F. The following conditions apply concerning approvals:

1. Approval of a particular source of supply or manufacturer does not relieve CONTRACTOR of CONTRACTOR's obligation to fulfill all requirements of the Specifications.

2. Approval of a particular manufacturer shall in no way be construed by CONTRACTOR as obligating OWNER to approve a Shop Drawing for a product from that manufacturer.

3. Subsequent to disapproval of a particular source of supply or manufacturer, CONTRACTOR shall submit to OWNER for approval within 7 days after notification of such disapproval a different source of supply or manufacturer for that product. The entire List of Submittals need not be resubmitted.

4. As an alternative to disapproving a particular source of supply for equipment, materials, or products, OWNER reserves the option to alter the type of submittal required for that product.

2.02 SAMPLES

A. If OWNER so requires, either prior to or after commencement of the Work, CONTRACTOR shall submit samples of materials for such special tests, or for file purposes, as OWNER deems necessary to demonstrate that they conform to the Specifications. Such samples shall be furnished, taken, stored, packed and shipped by CONTRACTOR as designated.

B. All samples shall be packed so as to reach their destination in good condition, and shall be labeled to indicate the material represented, the name of the Work and location for which the material is intended, and the name of firm submitting the sample. To ensure consideration of samples, CONTRACTOR shall notify OWNER by letter that the samples have been shipped and shall properly describe the same in the letter. The Letter of Notification shall be enclosed with the samples.

C. CONTRACTOR shall submit data and samples, or place its orders sufficiently early to permit consideration, inspection, testing, and approval before the materials and equipment are needed for incorporation into the Work.

D. When required, CONTRACTOR shall furnish to OWNER triplicate certified copies of manufacturer's shop or mill tests or reports from independent testing laboratories relative to the materials, equipment performance ratings, and concrete data.

E. The cost of samples, sample testing, and analysis associated with the approval of proposed materials and/or methods shall be borne in their entirety by CONTRACTOR.

2.03 CERTIFICATES AND AFFIDAVITS

A. Where specified in the Specifications that a certificate or affidavit be submitted to OWNER for a particular material, product or product component, such submittals shall be made in accordance with the following:

1. Equipment, Materials, and Products: A Certificate of Compliance shall indicate that the equipment, material, product, or product component complies with the requirements of the Specifications, and it shall be accompanied by test results and/or other technical data substantiating such compliance. The certificate shall be supplied by the material supplier or product component manufacturer.

2. Installation: A Certificate of Compliance shall indicate that the equipment or system has been properly installed in compliance with manufacturer's instructions and is ready to be operated. The certificate shall be supplied by the equipment or system manufacturer or manufacturer's representative.

B. Each certificate shall include a signed sworn statement by an official of the manufacturer, supplier, etc., originating the certificate attesting to the truth and accuracy of all information contained in the certificate. If such attestation of truth and accuracy cannot be included in the certificate itself, it must be provided as an affidavit accompanying the certificate.

2.04 SHOP DRAWINGS

A. Five copies of each Shop Drawing certified correct for construction shall be submitted for the approval of OWNER as soon as possible after approval of the List of Submittals and with due regard to the sequence in which such information will be required. This includes, but is not limited to, synthetic membrane material, geotextile fabric, geonet, aggregate, security fencing, concrete pre-engineered buildings, piping, pumps, components, and details of any deviation which CONTRACTOR proposes from the details as indicated on the Drawings and Construction Sequence, and any details not specifically indicated on the Drawings. It is CONTRACTOR's responsibility to provide finished Shop Drawings for approval, based on field measurements of actual conditions, indicating how CONTRACTOR proposes to install the Work and the equipment, materials, and products being furnished under the Contract. Copies of Drawings will not be accepted for submission as Shop Drawings.

B. Shop Drawings shall be submitted in proper sequence with due regard to the time required for the reviewing, approving and transmittal.

C. CONTRACTOR may submit manufacturer's literature as a substitute for, or supplement to, the Shop Drawings, provided the literature is explicit with regard to details of the items to be furnished. Samples and/or visual representation of the material shall accompany product data whenever available. Drawings, specifications and manufacturers' literature shall bear the name and address of the manufacturer or fabricator, and be clear, detailed, and complete. Catalog numbers of materials or equipment will not suffice.

D. Shop Drawing submissions shall be made to OWNER by CONTRACTOR only. Any data prepared by CONTRACTOR's subcontractors and suppliers shall be submitted through CONTRACTOR upon review by CONTRACTOR.

E. All Shop Drawings covering related items of equipment, material, and products or integrated systems of equipment, material, and products shall be submitted at the same time so that their complete installation can be adequately reviewed. No partial submissions will be considered. When it is necessary to meet the material delivery times required by the Contract, OWNER will approve partial submissions when accompanied by sufficient data to allow OWNER to determine the effect on the final design of other facilities being furnished under this Contract.

F. Shop Drawings shall be submitted to OWNER which have been checked and stamped with the approval of CONTRACTOR. CONTRACTOR's stamp shall include, but not be limited to, the submittal date, contract number, project name, submittal number, corresponding specification and paragraph number, and CONTRACTOR's name, signature and a notation that the Shop Drawing had been reviewed by CONTRACTOR and is in conformance with the referenced specification section. Two copies of the Shop Drawings and data submitted by CONTRACTOR for approval will be returned by OWNER to CONTRACTOR with comments such as, "No Exceptions Noted", "Exceptions Noted", or "Returned for Resubmission". CONTRACTOR shall correct the original Drawings and data, if required, and resubmit five copies of the revised Shop Drawings and data. Two copies of such revisions, reviewed by OWNER, will be returned to CONTRACTOR.

1. Shop Drawings shall be numbered in chronological order utilizing 001, 002, etc., as the format.

2. All Shop Drawings, when practical, shall be limited in size to 24 inch x 36 inch, and have borderlines set back 1/2 inch on top, bottom, and right-hand side of the sheet. When the scale to which the Drawings must be made for clarity, and the size of the equipment assembly or arrangement make it impractical to prepare the Drawings in 22-inch x 34-inch format, larger sheet sizes may be used.

3. CONTRACTOR shall revise the original Shop Drawings to reflect any and all changes made to the equipment, materials, or products in the field during construction. When the equipment, materials or products have been finally accepted, CONTRACTOR shall submit five copies of any Shop Drawing or data which have been so corrected. These copies will be added by OWNER to the bound sets or data submitted as specified below.

G. At the time of each submission, CONTRACTOR shall, in writing, notify OWNER of any deviation that the Shop Drawings have from the requirements of the Specifications. Failure to note deviations shall not excuse CONTRACTOR from complying with the requirements of the Specifications.

H. No equipment, materials, or products for which Shop Drawings have been submitted for approval shall be delivered to the job site or incorporated into the Work until CONTRACTOR has received copies of such approved Drawings or until OWNER has authorized CONTRACTOR in writing to do so.

I. OWNER's approval of CONTRACTOR's submitted data is for general conformance only. Although OWNER may review submitted data in detail, such reviewing is an effort to discover errors and omissions in CONTRACTOR's submissions and to assist CONTRACTOR in coordinating and expediting the Work. It shall in no way relieve CONTRACTOR of its obligation and responsibility to coordinate the Work or to relieve CONTRACTOR of its responsibility in fulfilling the purpose and intent of the Contract.

2.05 CONSTRUCTION "AS-BUILT" DRAWINGS

A. CONTRACTOR shall maintain at the Work site a complete set of Drawings as issued with the Contract Documents. Sepias of the Drawings shall be marked by CONTRACTOR to show any and all deviations made by him during construction. These Drawings shall be

labeled "RECORD" with 1/2-inch high block letters and submitted to OWNER at the completion of the project. All such revisions shall be marked every week to keep the Drawing set current during the construction process and prior to any item becoming inaccessible for an "As-built" Drawing to be performed.

B. CONTRACTOR's set of D rawings showing changes made during construction shall be available to OWNER throughout the construction period and shall be delivered to OWNER according to the requirements of paragraph 2.05.A, above.

2.06 MISCELLANEOUS DATA

A. Any other submittal required by these Specifications but not directly addressed under this Section shall be submitted in accordance with the requirements for Shop Drawings.

PART 3 - EXECUTION

3.01 GENERAL

A. During the Pre-Construction Conference procedures for handling Shop Drawings and other submissions will be established.

3.02 ALTERNATIVES TO SPECIFIED PRODUCTS

A. The Specifications may indicate the name of a manufacturer, a trade name, or a material to be used in the Contract. Reference made to a particular product of the manufacturer is made to identify a particular design, quality, construction arrangement, or style.

B. Where CONTRACTOR proposes to use a substitute product for that specified, CONTRACTOR shall submit to OWNER, for approval, complete information on such substitute product including all necessary redesign of the structure, equipment, or any other part of the Specification requiring modification as a result of the use of the requested substitute. All such redesign and all new Drawings and detailing required as a result thereof shall be prepared by CONTRACTOR at CONTRACTOR's expense, including regulatory permit acquisition for the modifications. Requests for additional money for such substitution will not be considered.

C. If CONTRACTOR proposes to provide products as "equals" to those specified, it shall be his responsibility to furnish complete, specific, detailed information to OWNER for approval from the manufacturer or supplier of the product he proposes to provide in which the requirements of the Specifications are shown to be met. This shall consist of a point-by-point comparison of the Specification requirements which the product proposed to be provided. In the event the Specifications mention a manufacturer, a point-by-point comparison of the product specified and that proposed to be provided shall be furnished by CONTRACTOR. If incomplete or irrelevant data are submitted as evidence of compliance with this subparagraph, the request for approval to provide this specific substitute will not be considered.

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

1. Where applicable in the Contract Documents, the minimum acceptable quality of equipment, materials, and Workmanship has been defined either by a manufacturer's name and product identification, or by reference to recognized industry standards.

2. If CONTRACTOR proposes to provide products as "equals" to those specified in the referencing Section on which the design is based, CONTRACTOR shall furnish complete, specific, detailed information to OWNER for approval, in which the requirements of the Contract Documents are shown to be met.

   a. These data shall be prepared or approved by the manufacturer of the proposed product, and shall include a point-by-point comparison between the features of the proposed product and the corresponding features of the product specified in the Contract Documents as the one on which the design is based. The features of the product specified shall be those of the manufacturer's model specified (including all standard catalog features and any specified options).

   b. If applicable, CONTRACTOR shall also furnish a description of the changes in structures and other equipment which will have to be made because of the proposed substitution.

   c. CONTRACTOR shall furnish these data.

   d. A request to furnish the substitute product will not be considered if incomplete or irrelevant data are submitted as evidence of compliance with the requirements.

1.02 QUALITY CONTROL

A. Qualification of Manufacturer

1. The manufacturer shall be regularly engaged in the business of manufacturing material and/or equipment of the type required by the referencing Section.

2. The manufacturer shall be one of those specified by name in the referencing Section, or must be specifically approved by OWNER.

a. Requests for approval of a manufacturer not named in the referencing Section shall be submitted to OWNER, accompanied by the following information:

i. List of at least five installations of material and/or equipment of comparable size and capacity, and operating under anticipated service conditions; showing location, installation date, model, capacity, and service.

ii. If the manufacturer cannot list five installations, list all those which have been made, if fewer than five.

iii. Complete literature, technical, and performance data describing the proposed equipment.

iv. Manufacturer's standard installation, operating, and maintenance instruction bulletins for the proposed equipment.

b. OWNER will notify CONTRACTOR, in writing, that OWNER has no objection to the manufacturer selected by CONTRACTOR; or will request further data to justify the selection. Upon notification, CONTRACTOR shall update the Materials List and submit this to OWNER.

c. If OWNER requests additional data on the actual performance of the equipment or system, CONTRACTOR shall submit evidence that the equipment or system proposed has been installed and has been in operation for a period prior to the date of Invitation for Bids, and that at least 2 years of such service are considered satisfactory by the operating superintendents of the facilities in which installed. The service and operating conditions for the equipment or system shall be as similar to those described in these Contract Documents, as is practical.

i. OWNER will review the experience record of the equipment or system proposed to be installed by CONTRACTOR, and will advise CONTRACTOR, in writing, as to whether or not it appears to be suitable for installation under this Contract.

d. If acceptable evidence of satisfactory experience with the proposed material and/or equipment cannot be furnished, CONTRACTOR will not be allowed to install it.

i. The original material and/or equipment which has been replaced will become the property of CONTRACTOR, who shall promptly remove it from the site.

ii. CONTRACTOR will be given reasonable opportunity to modify the equipment furnished, if necessary, so that it will be acceptable to

OWNER. Continuous operation in accordance with time for such modifications shall be maintained.

iii. The decision of OWNER with respect to replacing unsatisfactory equipment shall be final.

e. Neither approval by OWNER of CONTRACTOR's selection of a particular manufacturer or system supplier, nor accepting CONTRACTOR's selection together with the posting of a bond or deposit in lieu of satisfactory evidence of experience, shall obligate OWNER to approve details on the Shop Drawing submissions from that manufacturer which are not in conformance with the requirements of the Contract Documents.

f. Neither approval by OWNER of CONTRACTOR's selection of a particular manufacturer or equipment supplier, nor accepting CONTRACTOR's selection together with the posting of a bond or depositing lieu of satisfactory evidence of experience, shall relieve CONTRACTOR of CONTRACTOR's obligations to fulfill all requirements of the Contract Documents.

3. When so specified in the referencing Section, the manufacturer of the equipment or supplier of the system shall furnish, as requested by OWNER and at no additional cost to OWNER, the services of a qualified Technical Representative, to advise OWNER and CONTRACTOR in the installation and operation of the equipment or system; and to certify to OWNER, in writing, that the equipment or system is properly installed and ready to be operated.

B. Qualifications of Installers

1. CONTRACTOR shall provide at least one person who shall be present at all times during the installation of the items of equipment furnished under the referencing Section, who is thoroughly familiar with the type of materials being installed and with the manufacturer's recommended methods of installation and operation; and who shall direct all the Work performed on the equipment item being installed at no additional cost to OWNER.

2. The Certificate of Compliance required by Section 01300 must be issued by the manufacturer of the equipment or supplier of the system.

C. Codes and Standards

1. Equipment and installation shall comply with all applicable local, state, and federal codes and regulations.

2. Materials, equipment, and installation shall comply with:

a. The applicable standards of the governmental agency or industry standardizing organization publishing standards applicable to such Work.

b. The requirements of specific standards listed in the referencing Section.

c. Where the standards of several organizations (including the manufacturer's own published standards) are applicable to the same Work, the Work may be done in accordance with any such other standards that require an equal or higher quality construction for the specified service than those listed in the referencing Section. The selection of such an alternate standard to the one specified shall be subject to the approval of OWNER.

3. Where any provisions of pertinent codes or standards are in conflict with the requirements of the Contract Documents, the provisions requiring greater safety or operability, or higher quality construction for the specified service, shall govern; unless specific exemptions to such provisions are made in the referencing Section. The final determination shall be made by OWNER.

4. The codes and standards applicable to this Contract shall be, but not limited to, the codes in accordance with Section 01070.

PART 2 - PRODUCTS

2.01 DESIGN

A. The design of certain items in the facility, as shown in the Contract Documents, is based on the performance and dimensions of specific equipment items as furnished by particular manufacturers.

1. When the performance or dimensions of such items are proprietary, and furnished only by one particular manufacturer, the referencing Section will state the design is based on a particular model of that manufacturer.

a. CONTRACTOR may furnish and install corresponding products produced by an alternate manufacturer; either one named as an alternate in the referencing Section, or any other one selected by CONTRACTOR and approved or accepted by OWNER on the basis of the information supplied as requested in Part 1 of this Section.

b. CONTRACTOR shall furnish OWNER with those data on the particular model of the alternate manufacturer which are required to demonstrate that the proposed equipment or system is at least equivalent in performance in the specified service to the equipment or system on which the design is based. If CONTRACTOR proposes a modification to the Contract Price due to the substitute equipment, this will also be evaluated by OWNER.

c. Approval by OWNER of the proposed substitution will not be unreasonably withheld.

d. The design of the facilities associated with the equipment or system for which a substitution is proposed, may be affected by such substitution. The size of the building or supporting structure, the size, and arrangement of piping and wiring, the specification for associated equipment, the necessary controls, and the service requirements will have to be reconsidered by CONTRACTOR. CONTRACTOR shall be completely responsible for the necessary redesign of all facilities affected by the substitution, and shall prepare the revisions to the Project Drawings required by such substitution. These revisions shall be submitted to OWNER for approval, in accordance with the provisions in Section 01300, including the specific notice as to the details in which the substitute design differs from the requirements of the Contract Documents. All such redesign and all new Drawings and detailing required as a result thereof shall be prepared by CONTRACTOR at no additional cost to OWNER. Requests for additional payment for such substitution will not be considered unless made a part of the final request for approval of the substitution itself.

2.02 MATERIALS

A. All materials, including those not specifically described or specified, but required for a complete and proper installation of the Work shall be new, first quality of their respective kinds, and subject to the approval of OWNER.

B. All materials shall be in accordance with details and samples as specified in the referencing Section, and submitted and approved in accordance with Section 01300 - SUBMITTALS.

2.03 INTERCHANGEABILITY

A. All products of the same size and type and performing the same function shall be, insofar as practical, the products of one manufacturer.

1. Details in the Shop Drawing submissions of the several equipment manufacturers shall be coordinated so that items such as lubricating fittings, for example, are identical on all equipment items requiring the same grade of lubricant.

PART 3 - EXECUTION

3.01 CONSTRUCTION CONDITIONS

A. Inspection

1. Prior to start of the Work, CONTRACTOR shall carefully inspect the existing and previously installed Work, and verify that all Work is in such a condition that the installation of new Work may properly commence and be carried out to a proper and timely completion.

2. CONTRACTOR shall verify that each item of Work shall be installed in accordance with all pertinent codes and regulations, the approved design, and the referenced standards.

B. Discrepancies

1. In the event of discrepancies, CONTRACTOR shall immediately notify OWNER, in writing, of such conditions.

2. CONTRACTOR shall not proceed with installation in areas of discrepancy until such discrepancies have been corrected in a manner acceptable to OWNER.

3.02 INSTALLATION

A. CONTRACTOR shall install each equipment item in strict accordance with the manufacturer's instructions, unless specifically designated in writing otherwise by OWNER. CONTRACTOR shall not void the manufacturer's guarantee.

B. In the event of discrepancies between the Contract Documents and the equipment manufacturer's formal installation instructions, as submitted for the actual units supplied; CONTRACTOR shall notify OWNER, in writing, of such discrepancies. CONTRACTOR shall obtain the equipment manufacturer's approval in writing, of any changes required to suit the job conditions, and so advise OWNER.

END OF SECTION

SECTION 01410
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Selection and Payment.

B. Quality Assurance.

C. Laboratory Responsibilities.

D. Laboratory Reports.

E. Limits on Testing Laboratory Authority.

F. CONTRACTOR Responsibilities.

G. Schedule of Inspections and Tests.

1.02 RELATED SECTIONS

A. 01300 – Submittals.

B. 02211 – Rough Grading.

C. 02222 – Excavating.

D. 02223 – Backfilling.

E. 02240 – Dewatering.

1.03 REFERENCES

A. ANSI/ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

B. Tests shall be conducted in accordance with the methods specified in Table 1410-A, Schedule of Testing unless otherwise stated.

1.04 SELECTION AND PAYMENT

A. CONTRACTOR will subcontract and pay for services of an independent testing laboratory to perform specified inspection and testing.

1.05 QUALITY ASSURANCE

A. Comply with requirements of ANSI/ASTM E329 and ANSI/ASTM D3740.

B. Laboratory: Analytical and/or geotechnical laboratory authorized to operate in State of Mississippi and approved by OWNER.

C. Laboratory Staff: Maintain a full time specialist on staff to review services.

D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) or accepted values of natural physical constants.

1.06 LABORATORY RESPONSIBILITIES

A. Test samples submitted by CONTRACTOR.

B. Provide qualified personnel at site.

C. Perform specified inspection, sampling, and testing of products in accordance with specified standards.

D. Ascertain compliance of materials and mixes with requirements of Contract Documents.

E. Promptly notify OWNER and CONTRACTOR of observed irregularities or non-conformance of Work or Products.

F. Perform additional inspections and tests required by OWNER.

G. Attend pre-construction conferences and progress meetings.

1.07 LABORATORY REPORTS

A. After each inspection and test, promptly submit three copies of laboratory report to OWNER and to CONTRACTOR.

B. The reports shall include the following information:

1. Date issued;
2. Project title and number;
3. Name of inspector;
4. Date and time of sampling or inspection;
5. Identification of product and specifications section;
6. Location in the project;
7. Type of inspection or test;
8. Date of test;
9. Results of test;
10. Conformance with Contract Documents; and
11. Test reports signed and sealed.

C. When requested by OWNER, provide interpretation of test results.

1.08 LIMITS ON TESTING LABORATORY AUTHORITY

A. Laboratory may not release, revoke, alter, or expand on requirements of the Contract Documents.

B. Laboratory may not approve or accept any portion of the Work.

1.09 CONTRACTOR RESPONSIBILITIES

A. Collect and deliver, to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.

B. Cooperate with laboratory personnel, and provide access to the Work.

C. Provide incidental labor and facilities to provide access to Work to be tested, to obtain and handle samples at the site or at source of Products to be tested, to facilitate tests and inspections, storage, and curing of test samples.

D. Notify OWNER and laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

E. Arrange with laboratory and pay for additional samples and tests required by CONTRACTOR beyond specified requirements.

Table 01410-A

Schedule of Testing
OWNER: HERCULES INCORPORATED
IMPOUNDMENT BASIN DECOMMISSIONING

Location	Test Method	
	USEPA 9095A Solid Waste Paint Filter Method	Physical Properties (See Tables 1410-B & 1410-C)
1a. Dewatered Material	1 per load of dewatered material send to landfill	D2216
1b. Solidified Material	As required	N/A
2. Backfill	N/A	Minimum of 1 per source
3. Topsoil	N/A	Minimum of 1 per source

N/A not applicable

Table 01410-B

Physical Properties for Backfill Materials
OWNER: HERCULES INCORPORATED
IMPOUNDMENT BASIN DECOMMISSIONING

Property	ASTM Standard Number	Off-Site Backfill
Laboratory Determination of Water (Moisture) Content of Rock and Soil Aggregate Mixtures	D2216	--
Particle-Size Analysis of Soils	D422	ML/CL
Amount of Material in Soils Finer Than the No. 200 Sieve	D1140	>50%
Liquid Limit	D4318	<50%
Plasticity Index of Soil	D4318	<20%

Table 01410-C

Preconstruction Testing Frequency for Material From Borrow Locations
OWNER: HERCULES INCORPORATED
IMPOUNDMENT BASIN DECOMMISSIONING

Material	Test	Frequency of Test
Physical Test		
Backfill	ASTM D1140, D2216, D4318, and D422	1 per material type minimum[1]
Chemical Test[2]		
Backfill/Topsoil (off site)	SW-846 Method 6010 (RCRA 8 list) SW-846 Method 8260B (Appendix IX list) SW-846 Method 8270C (Appendix IX list)	1 per material type minimum

ASTM D1140	Amount of Material in Soils Finer than the No. 200 Sieve.
ASTM D2216	Laboratory Determination of Water (Moisture) Content of Soil, Rock and Soil Aggregate Mixtures.
ASTM 4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soil.
ASTM D422	Particle size analysis.
Method 6010/7000	Target Analyte List.
Method 8260B	Target Compound List Volatile Organic Constituents.
Method 8270C	Target Compound List Semivolatile Organic Constituents.
Method 8015 B Mod	Total Petroleum Hydrocarbons, diesel, oil, and gas range organics

Notes:
(1) Change in material type (i.e., physical characteristics) will require additional testing.
(2) Samples obtained for chemical tests will be analyzed in accordance with Test Methods For Evaluating Solid and Hazardous Waste (SW-846).

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Clean-Up

1. Upon completion of the Work and before a Certificate of Substantial Completion is issued by OWNER to CONTRACTOR, the Work site and other areas occupied by CONTRACTOR during construction shall be cleaned, and all surplus and discarded materials, false Work, and rubbish placed thereon by CONTRACTOR shall be removed by CONTRACTOR. No separate payment will be made for clean-up as all such costs shall be included in the Base Bid.

B. Warranties and Guarantees

1. Upon completion of the Work and before a Certificate of Substantial Completion is issued by OWNER to CONTRACTOR, all Warranties shall be submitted to OWNER.

C. "As-built" Drawings

1. Upon Completion of the Work and before a Certificate of Substantial Completion is issued by OWNER to CONTRACTOR, all "As-built" Drawings shall be complete and submitted to OWNER.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION
(Not Used)

END OF SECTION

SECTION 02066
BELOWGRADE PIPE DECOMMISSIONING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Belowgrade Pipe Scheduled for Decommissioning by CONTRACTOR.

B. Belowgrade Pipe Scheduled for Decommissioning by CONTRACTOR with Assistance from OPERATOR.

C. Belowgrade Pipe Scheduled for Decommissioning by OPERATOR.

1.02 RELATED SECTIONS

A. Section 01300 - Submittals

B. Section 02073 - Decontamination

C. Section 02074 - Material Management

D. Section 02088 - Materials Transportation

E. Exhibit "B" - Facility Drawings

1.03 SUBMITTALS

A. Submit under the provisions of Section 01300.

B. Submit proposed methods for removing belowgrade pipe.

1.04 REGULATORY REQUIREMENTS

A. Conform to all federal and state occupational safety and health regulations.

B. Conform to requirements of all federal, state, and local regulatory agencies.

1.05 JOB CONDITIONS

A. Data: Relevant maps and facility drawings specific to this Section are provided for use with this Section. These items are provided in the Contract Documents for information only and the OWNER and ENGINEER assume no responsibility for any conclusions the CONTRACTOR may draw from such information. The CONTRACTOR shall investigate and determine existing building and site conditions under which the CONTRACTOR shall operate in performing the WORK. The CONTRACTOR shall be responsible for ALL items where specified.

1.06 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 01300.

B. Accurately record, label, and mark all quantities of materials to be disposed by OWNER and CONTRACTOR.

PART 2 - PRODUCTS

2.01 The CONTRACTOR shall provide all equipment and materials (caps, blinds, gaskets, cement, grout, etc.) necessary to effect belowgrade pipe disconnections specified in Part 3 of this Section. The CONTRACTOR shall provide materials to match the existing materials at the points of disconnection and in accordance with all applicable building codes and regulations.

2.02 The CONTRACTOR shall provide all equipment and materials necessary to permanently label each decommissioned belowgrade pipe as specified in Part 3 of this Section. The CONTRACTOR shall provide labels constructed of weatherproof materials (e.g., plastic or metal) and engraved with the following information:

Pipe Name or Designation "Flushed – Out of Service" Date Decommissioned	or	Pipe Name or Designation "Not Flushed – Out of Service" Date Decommissioned

2.03 The ENGINEER and the OPERATOR shall provide approval of all belowgrade pipe capping and labeling materials.

PART 3 - EXECUTION

3.01 BELOWGRADE PIPE SCHEDULED FOR DECOMMISSIONING BY CONTRACTOR

A. General

1. The belowgrade pipe scheduled for decommissioning by the CONTRACTOR shall include all belowgrade pipe identified on the drawings in Exhibit B.

2. The ENGINEER will determine when decontamination activities are completed for the belowgrade pipe scheduled for decommissioning by the CONTRACTOR and will direct the disposition of all materials generated.

3. CONTRACTOR shall decontaminate pipe sufficient to meet recycler's specifications for disposal.

B. Belowgrade Pipe Decommissioning

1. The CONTRACTOR shall conduct all work in accordance with these Specifications and the Site Health and Safety Plan.

2. The CONTRACTOR shall disconnect all belowgrade pipes before initiating equipment decommissioning.

3. The CONTRACTOR shall confirm that all utility shut-offs have been effected for any equipment connected to the belowgrade pipe scheduled for decommissioning. The CONTRACTOR shall notify the ENGINEER of all active utility lines. The CONTRACTOR shall not disconnect any active utility before the ENGINEER notifies the CONTRACTOR that coordination with the OPERATOR has been completed.

4. The CONTRACTOR shall not damage any belowgrade pipe subject to reuse or abandonment in-place. The items below will be conducted as directed by OWNER and ENGINEER.

   a. Before disconnection, the CONTRACTOR shall identify in the field all ends of each pipe. The CONTRACTOR shall select which end(s) of the pipe will be used for water injection and which end(s) of the pipe will be used for wastewater and washwater recovery.

   b. The CONTRACTOR shall estimate the volume of the pipe based on available maps, construction drawings, and field inspection and shall ensure that adequate container volume is available to contain a minimum of one pipe volume of wastewater and one pipe volume of washwater.

   c. The CONTRACTOR shall flush each pipe with potable water or other water source approved by the ENGINEER. The CONTRACTOR shall employ methods in keeping with standard industry practices to control water pressure and flow rate and to prevent backflow. These methods may include, but are not limited to, the use of pressure gauges, pressure relief valves, control valves, and backflow preventers.

   d. The CONTRACTOR shall submit proposed methods for the control of water pressure, flow rate, and backflow.

   e. The CONTRACTOR shall flush each pipe with a sufficient volume of water to displace any wastewater remaining in the pipe. The CONTRACTOR shall continue flushing each pipe until water flow is observed from the downgradient end of the pipe.

   f. The CONTRACTOR shall collect all wastewater removed from pipes and manage as specified in Section 02074. The CONTRACTOR shall not commingle petroleum products except as directed by the ENGINEER.

   g. The CONTRACTOR shall collect all washwater from cleaning and transport the washwater to the washwater treatment system or other approved location as specified in Section 02074.

h. The CONTRACTOR shall exercise due care in keeping with standard industry practices to contain liquids and washwaters generated during decommissioning of belowgrade pipe.

5. The CONTRACTOR shall permanently cap each pipe using materials as specified in Paragraph 2.01 of this Section.

6. The CONTRACTOR shall permanently affix a label as specified in Paragraph 2.02 of this Section to each end of each decommissioned belowgrade pipe.

END OF SECTION

SECTION 02073
DECONTAMINATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Decontamination Methods

1.02 RELATED SECTIONS

A. Section 01014 - Work Sequence

B. Section 01300 - Submittals

C. Section 02074 - Material Management

D. Section 02088 - Materials Transportation

1.03 SUBMITTALS

A. Submit proposed decontamination procedures to be utilized.

PART 2 - PRODUCTS

2.01 DECONTAMINATION MATERIALS SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

A. Appropriate non-foaming detergents (e.g., Alconox™, Simple Green™, or similar) as approved by the ENGINEER and OWNER; and

B. Spill containment and control products including, but not limited to, plastic sheeting and absorbent materials.

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall decontaminate each truck (i.e., the wheels, axles, and top rails) that is used to transport waste material to an off-site landfill. The CONTRACTOR shall make all reasonable efforts to eliminate waste material from any project and/or public road. CONTRACTOR will be responsible for the removal of waste material on any project and/or public road.

B. The CONTRACTOR shall make all reasonable efforts to minimize the volume of washwater generated during decontamination activities. Where decontamination criteria can be attained using more than one decontamination method, the CONTRACTOR shall select the method that will generate the least amount of washwater.

C. The CONTRACTOR shall manage all materials generated from decontamination activities in accordance with Section 02074.

D. The CONTRACTOR shall direct all washwaters generated to the existing facility's industrial sewer (MDEQ Water Pollution Control Permit No. MSP092186), as specified in Section 02074. The CONTRACTOR shall control the volume of washwater generated in each area in such a manner as to not exceed the available storage capacity.

E. The CONTRACTOR shall exercise due care in keeping with standard industry practices to control all liquids used for cleaning actions and to prevent the transfer of residuals from the surface being cleaned to another surface or material or to the environment. The CONTRACTOR shall be responsible for devising methods for control of the washwater to assure that residuals are not spread or released. To the extent practical, the CONTRACTOR may utilize existing sumps and containment structures for the control of washwater. The CONTRACTOR may also construct a decontamination pad for the containment of washwater at a location(s) approved by the ENGINEER.

3.02 WET CLEANING METHODS

A. High Pressure Hot Water Washing

1. High pressure hot water washing shall consist of the high pressure application of a hot water and detergent solution through a nozzle for removing residuals from surfaces.

2. The CONTRACTOR shall use detergent as necessary and specified in Part 2 of this Section for cleaning impacted surfaces.

3. The CONTRACTOR shall clean each surface with high pressure hot water and detergent followed by rinsing each surface with high pressure hot water at a minimum.

4. The CONTRACTOR shall repeat cleaning activities as necessary for each unit until the inspection criteria specified in Paragraph 3.04 of this Section have been attained.

5. The CONTRACTOR shall make all reasonable efforts to minimize the volume of washwater generated.

B. High Pressure Steam Cleaning

1. Steam cleaning shall consist of the use of high pressure steam to physically remove oil, grease, and water soluble residuals from surfaces.

2. The CONTRACTOR shall clean each surface scheduled for steam cleaning as necessary to remove surface residues.

3. For equipment not subject to rinsate verification sampling, the CONTRACTOR shall repeat cleaning activities as necessary for each unit until the inspection criteria specified in Paragraph 3.04 have been attained.

4. The CONTRACTOR shall make all reasonable efforts to minimize the volume of washwater generated.

C. Belowgrade Piping

1. The CONTRACTOR shall clean belowgrade piping as specified in Section 02066 of these Specifications, if directed by ENGINEER.

2. The CONTRACTOR shall not damage belowgrade piping subject to abandonment in-place.

D. Pump Cleaning

1. The CONTRACTOR shall use appropriate tools and equipment in addition to the specified wet cleaning methods to ensure that interior surfaces of pumps subject to decontamination are adequately cleaned.

2. The CONTRACTOR may dismantle or cut pump components subject to disposal or recycling as necessary to facilitate cleaning.

3.03 REMOVAL OF SOLIDS AND DRY RESIDUES

A. Manual Removal of Solids

1. The CONTRACTOR shall use shovels, brushes, brooms, and other appropriate tools or equipment for the removal of solids and dry residues.

2. The CONTRACTOR shall manage all material or debris that is collected as a result of this method as specified in Section 02074.

3. The CONTRACTOR shall make all reasonable efforts to manually remove solids and residues prior to implementing the wet cleaning methods specified in Paragraph 3.02 of this Section.

B. Dry Vacuum Method

1. The CONTRACTOR may use an industrial vacuum cleaner with a High Efficiency Particulate Absorbing (HEPA) Filter to collect loose debris, particulate matter, and accumulated dust from surfaces and equipment subject to decontamination.

2. If accumulated adsorbed dust is not effectively removed by the nozzle velocity, then the CONTRACTOR shall utilize additional physical action such as brushing to remove the dust. The brush may be a nozzle brush or unattached.

3. The CONTRACTOR shall manage all material or debris that is collected as a result of this method as specified in Section 02074.

C. Wet Vacuum Method

1. The CONTRACTOR may use appropriate vacuuming equipment to collect loose debris, particulate matter, and accumulated dust as well as washwater from area surfaces and equipment subject to decontamination.

2. When collecting solids and washwater as specified herein, the CONTRACTOR shall utilize appropriate equipment to separate solids and liquids including, but not limited to, filters, cyclones, and screens.

3. The CONTRACTOR shall transfer all washwater to the existing facility's industrial sewer (MDEQ Water Pollution Control Permit No. MSP092186) as specified in Section 02074.

4. The CONTRACTOR shall manage all solid debris as specified in Section 02074.

3.04 INSPECTION OF DECONTAMINATED MATERIALS

A. Inspection Criteria

1. The CONTRACTOR shall remove all solid debris and surface residues to the extent practical from each unit subject to decontamination.

2. All units subject to decontamination shall be inspected by the ENGINEER prior to release for removal, disposal, or abandonment in-place. The CONTRACTOR shall notify the ENGINEER when cleaning activities have been completed for each unit.

3.05 RINSATE VERIFICATION SAMPLING

A. Analytical Criteria for Units Subject to Removal

1. For each unit subject to removal, the unit will be considered adequately cleaned after three times to comply with the regulatory definition of "clean".

END OF SECTION

SECTION 02074
MATERIAL MANAGEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Identification of anticipated materials and disposition

B. Material characterization

C. Instructions for container labeling

D. Instructions for container storage

E. Designation of off-site disposition facilities

F. Material tracking procedures

1.02 RELATED SECTIONS

A. Section 01014 - Work Sequence

B. Section 01300 - Submittals

C. Section 01700 - Contract Closeout

D. Section 02088 - Materials Transportation

1.03 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Accurately record on Material Tracking Forms, label, and mark all quantities of Materials to be recycled or disposed by OWNER, ENGINEER, or CONTRACTOR. Submit Material Tracking Forms to ENGINEER as specified in this Section.

C. Submit list of proposed recycling facilities in accordance with Paragraph 3.06 of this Section. Disposal of all other industrial waste shall be at the Pine Belt Regional Landfill, Ovett, Mississippi.

1.04 PROJECT RECORD DOCUMENTS

A. Material Tracking Forms

B. CONTRACTOR is responsible for obtaining pre-printed Bills of Lading and/or manifest documentation from Pine Belt Regional Landfill.

1.05 REGULATORY REQUIREMENTS

A. Mississippi Administrative Code for Solid Waste

B. Mississippi Department of Environmental Quality

C. Mississippi Department of Transportation

1.06 PERMITTING/REGISTRATION

A. USEPA Identification Number to be provided by OWNER.

PART 2 - PRODUCTS

2.01 PACKAGING MATERIALS AND PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

A. Bulk containers and containment structures appropriate for overland transport of dewatered and/or solidified sludge material;

B. 55-gallon steel drums, removable head, USDOT-approved (Identification Code 1A2 or similar);

C. 55-gallon polyethylene drums, removable head, USDOT-approved (Identification Code 1H2 or similar); and

D. Spill clean-up and containment materials including, but not limited to, brooms, shovels, plastic sheeting, and absorbent materials.

PART 3 - EXECUTION

3.01 GENERAL

A. The purpose of this Section is to provide for the proper handling and disposition of Material generated during the dewatering activities at the site. The special definitions that are applicable to this Section are found in the regulations that apply to the management of hazardous and nonhazardous wastes (40 CFR Parts 260 through 263 and 268, Mississippi Administrative Code for Solid Waste). Materials that may be generated during site activities include, but are not limited to, the following:

1. Class 1 Non-hazardous Sludges and Solids;

2. Class 2 Non-hazardous scrap metal;

3. Liquid effluent generated during dewatering;

4. Spent absorbents;

5. Personal protective equipment;

6. Washwater.

B. The CONTRACTOR shall work under the direction of the ENGINEER and OWNER to aid in the proper characterization and disposition of Material to ensure Material is disposed or recycled in a manner consistent with the applicable regulations.

C. The CONTRACTOR shall not mix or dilute any potentially hazardous waste with any other Material.

D. The ENGINEER and the OWNER shall reserve the right to modify the Material management procedures specified herein as necessary and as dictated by the classification of the Materials generated.

3.02 IDENTIFICATION OF ANTICIPATED WASTE STREAMS AND WASTE DISPOSITION

A. Class 1 Non-hazardous Sludges and Solids

1. Process - related solids and sludges shall include solids and sludges contained within the dewatering cells, including the IB sludge and approximately 6 inches of native soil below the sludge, within the Impoundment Basin the material used for constructing the dewatering cells, including the stone or sand layer, the geosynthetic drainage composite, the HDPE liner, and the decommissioned pipes.

2. The CONTRACTOR shall dewater sludges such that the material passes the paint filter test (SW 846 9095A). The dewatered sludge shall be tested for every material load transported offsite to the landfill as well as at the approved landfill site. Transportation of material from the facility must be in accordance with the Mississippi Department of Transportation rules and regulations.

3. The CONTRACTOR shall stockpile dewatered material in a location approved by the ENGINEER and OWNER.

4. Prior to transport, stockpiles of dewatered material that passes the paint filter test shall remain segregated from materials that do not pass the paint filter test. The material shall be loaded onto bulk containers prepared for transport over Mississippi roads and highways.

5. The CONTRACTOR shall label each bulk container as specified in Paragraph 3.04 of this Section.

6. The CONTRACTOR shall stage containers in the staging areas identified on the contract drawings.

B. Class 2 Nonhazardous Scrap Metal

1. Class 2 nonhazardous scrap metal shall include miscellaneous scrap metal that has not been chemically impacted or that has been cleaned to meet the criteria specified in Paragraph 3.05.A.1 of Section 02073.

2. The CONTRACTOR shall provide a water-tight, 20-yd^3 roll-off container, or other appropriate, USDOT-approved container, for the accumulation of Class 2 nonhazardous scrap metal.

3. The CONTRACTOR shall stage the roll-off container in the staging areas identified on the contract drawings.

4. If the container is staged in an uncovered area, the CONTRACTOR shall provide a water-tight cover for the container. The CONTRACTOR shall maintain the cover on the container at all times except when scrap metal is being placed in the container. The CONTRACTOR shall cover the container immediately in the event of inclement weather.

5. The CONTRACTOR shall complete a Material Tracking Form for each container of Class 2 nonhazardous scrap metal that is generated.

6. The CONTRACTOR shall transport and provide for the recycling of Class 2 nonhazardous scrap metal in accordance with the requirements specified in Section 02088.

7. The CONTRACTOR may load Class 2 nonhazardous scrap metal bulk items directly to an appropriate transport vehicle if the scrap metal bulk items meet the criteria specified in Paragraph 3.05.A of Section 02073, and if the scrap metal bulk items have been released by the ENGINEER.

C. Liquid effluent generated during dewatering

1. The CONTRACTOR shall collect and transfer all liquid effluent generated during dewatering to on-site tanks or frac tanks as directed by ENGINEER. The liquid effluent shall be sampled for the analytical parameters contained in the facility's MDEQ Water Pollution Control Permit No. MSP091286. Liquid effluent must meet the discharge limits specified in the facility's MDEQ Permit.

2. The CONTRACTOR shall sequence the WORK as described in Section 01014 to ensure that sufficient capacity is present on-site to containerize the anticipated volume of generated liquid effluent. .

3. The CONTRACTOR shall facilitate the collection of generated liquid effluent samples as requested by the ENGINEER.

4. The CONTRACTOR is responsible for providing storage capacity for generated liquid effluent until the ENGINEER directs CONTRACTOR to discharge generated

4. The CONTRACTOR shall provide 55-gallon steel drums as specified in Part 2 of this Section for the accumulation of spent PPE, as necessary.

5. The CONTRACTOR shall label each drum as specified in Paragraph 3.04 of this Section.

6. The CONTRACTOR shall stage containers in a location designated by the ENGINEER as specified in Paragraph 3.05 of this Section.

7. The CONTRACTOR shall complete a Material Tracking Form for each drum of spent PPE generated.

8. The CONTRACTOR shall transport and provide for the disposition of Class 2 spent PPE in accordance with the requirements specified in Section 02088.

9. At the direction of the ENGINEER, the CONTRACTOR shall manage Class 2 spent PPE as Class 2 nonhazardous waste solids.

F. Washwater

1. The CONTRACTOR shall collect and transfer all washwater generated during completion of the WORK to the existing facility's industrial sewer (NPDES permit MSP091286). Washwater must meet the discharge limits specified in the facility's NPDES Permit.

2. The CONTRACTOR shall dispose of all washwater through the water treatment system. The CONTRACTOR shall sequence the WORK as described in Section 01014 to ensure that the majority of washwater will be discharged through the existing facility's industrial sewer (NPDES permit MSP091286) prior to its decommissioning.

3. The CONTRACTOR is responsible for provided storage capacity for washwater.

4. The CONTRACTOR shall facilitate the collection of washwater treatment samples as requested by the ENGINEER.

3.03 MATERIAL CHARACTERIZATION

A. The CONTRACTOR shall provide characterization of any material suspected to contain hazardous or asbestos containing material, if encountered.

3.04 CONTAINER LABELING (DRUMS, BAGS, AND BULK CONTAINERS)

A. The CONTRACTOR shall label each container with a unique container tracking number. Permanently attached container inventory numbers may be used to track bulk containers.

B. The CONTRACTOR shall label each drum, bag, and bulk container with the container contents and as a "Hazardous Waste" or "Nonhazardous Waste", as directed by the ENGINEER. For Materials that are pending analytical characterization, the

CONTRACTOR shall label the container "Analytical Characterization Pending," until directed otherwise by the ENGINEER.

C. The CONTRACTOR shall label each container with the date upon which the container was filled.

D. For hazardous wastes, the CONTRACTOR shall label each container with the appropriate USEPA waste codes as directed by the ENGINEER, OWNER, and/or the OWNER'S representative.

E. The CONTRACTOR shall label all containers with appropriate labels regarding fire and health risk criteria ("Flammable", "Corrosive", etc.) as directed by the ENGINEER. USDOT-approved chemical hazard labels may be used for this purpose.

F. The CONTRACTOR shall ensure that labeling is legible and clearly visible at all times. The CONTRACTOR shall label at least two (2) sides of each container.

3.05 CONTAINER STORAGE

A. Storm water accumulated in construction areas shall be managed by the CONTRACTOR as directed by the ENGINEER.

B. The CONTRACTOR shall stage bulk containers in the staging areas identified on the contract drawings. Should roll-off containers or frac tanks be staged in uncovered areas, the CONTRACTOR shall provide a water-tight cover for each container. The CONTRACTOR shall maintain the cover on the container at all times except when Materials are being placed in the container.

3.06 DESIGNATION OF OFF-SITE DISPOSAL

A. Class 1 nonhazardous waste solids, construction debris, Class 2 spent absorbents, Class 2 PPE, and Class 2 miscellaneous solids and sludges shall be disposed by the CONTRACTOR at the Pine Belt Regional Landfill in Ovett, Mississippi.

B. Class 2 scrap metal shall be recycled by the CONTRACTOR.

C. The CONTRACTOR shall submit to the ENGINEER in accordance with Section 01300 the names of all facilities at which off-site recycling is scheduled. The selection of off-site recycling facilities is subject to the approval of the OWNER and the ENGINEER.

3.07 MATERIAL TRACKING FORM

A. The CONTRACTOR shall complete a Material Tracking Form for each container including drums, bags, roll-offs, trucks, and other appropriate containers. The CONTRACTOR shall record the unique container tracking number, the name of the Material, the source of the Material, available characterization information as designated by the ENGINEER and OWNER, the date of Material generation, and any other appropriate information or comments on the Material Tracking Form.

B. The CONTRACTOR shall retain a copy of each Material Tracking Form on site throughout the duration of the WORK and shall submit the original Material Tracking Form to the ENGINEER on the day it is complete.

END OF SECTION

SECTION 02088
MATERIALS TRANSPORTATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Identification of Materials for transportation.

B. Packing, marking, labeling, and placarding containers for transportation.

C. Shipping documents.

1.02 RELATED SECTIONS

A. Section 01300 - Submittals

B. Section 01700 - Contract Closeout

C. Section 02073 - Decontamination

D. Section 02074 - Material Management

1.03 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Submit Material Tracking Forms to ENGINEER as specified in Section 02074.

C. Accurately complete all waste manifests, bills of lading, and related shipping documents and submit to ENGINEER for review.

D. Submit final original copies of bills of lading as specified in Section 01700.

E. Submit list of proposed transport subcontractors.

1.04 PROJECT RECORD DOCUMENTS

A. Bills of Lading

B. Material Tracking Forms

1.05 REGULATORY REQUIREMENTS

A. Conform to the requirements of all federal, state, and local regulatory agencies including, but not limited to, the following:

1. Title 40, Code of Federal Regulations, Parts 264.314 and 265.315

1.06 PERMITTING/REGISTRATION/TRAINING

A. CONTRACTOR shall comply with all applicable federal and state transporter registration and permitting requirements.

PART 2 - PRODUCTS

Packaging materials and products including, but not limited to, the following:

A. 55-gallon steel drums, removable head, USDOT-approved (Identification Code 1A2 or similar);

B. 55-gallon polyethylene drums, removable head, USDOT-approved (Identification Code 1H2 or similar);

C. Indelible markers or paint pens for container labeling;

D. USDOT-approved chemical hazard labels; and

E. Mississippi Department of Transportation approved trucks and/or trailers.

PART 3 - EXECUTION

3.01 SHIPPING DOCUMENTS

A. BILLS OF LADING - The CONTRACTOR shall prepare bills of lading for all shipments of Class 2 nonhazardous wastes (including scrap metal). The CONTRACTOR shall submit each bill of lading to the ENGINEER for review and signature at least 24 hours in advance of shipping.

B. WASTE PROFILES - The CONTRACTOR shall prepare the waste profile forms required by the designated disposal facility.

C. SHIPMENT REVIEW - The CONTRACTOR shall make all packaged and/or bulk loaded waste available to the ENGINEER for observation at the time the bill of lading is prepared. Between observation by the ENGINEER and transport by the CONTRACTOR, the CONTRACTOR shall secure the waste to ensure that it is not changed in any way.

D. The CONTRACTOR shall submit the original, signed generator's copy and one photocopy of each bill of lading to the ENGINEER. The ENGINEER shall submit the original, signed generator's copy to the OWNER. The CONTRACTOR shall also submit the original, signed copy and one photocopy of each bill of lading signed by the receiving facility to the ENGINEER. The ENGINEER shall submit the original, signed copy to the OWNER.

E. Transport of site materials shall be conducted over paved roads and highways.

F. It is strongly suggested to execute left turns at red lights for the duration of transport activities conducted for this project.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02205
SOIL MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

A Existing On-Site Soil Materials.

B. Clean Backfill from an Off-Site Source.

C. Clean Topsoil from an Off-Site Source.

1.02 RELATED SECTIONS

A. Section 02211 - Rough Grading.

B. Section 02223 - Backfilling.

C. Section 02936 - Seeding.

1.03 REFERENCES

A. ASTM D2487 - Classification of Soils for Engineering Purposes.

B. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.04 SUBMITTALS

A. Submit under provisions of Section 01300.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. Backfill Material: Clean soil material graded, free of lumps larger than 3 inches, rocks larger than 2 inches, roots, and debris; conforming to ASTM D2487 Group Symbol CL or CH.

B. Topsoil Material: Soil used for backfill material shall be clean soil material graded, free of lumps larger than 3-inches, rocks larger than 2-inches, roots, and debris. The topsoil material shall be capable of supporting vegetative growth as specified in Section 02936 - Seeding.

2.02 SOURCE QUALITY CONTROL

A. Assessment and testing shall be performed under provisions of Section 01400 - Quality Control and Section 01410 - Testing Laboratory Services.

B. If tests indicate materials do not meet specified requirements, cease Work and notify ENGINEER immediately.

PART 3 - EXECUTION

3.01 TEMPORARY STORAGE

A. All soil materials shall be hauled and placed. There are no temporary storage areas available on-site.

END OF SECTION

SECTION 02211
ROUGH GRADING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Cut, grade, fill, and rough grade the excess material located in the impoundment basin and dewatering cells shown on the Project Drawings.

B. Place and compact aggregate, as necessary, to temporarily create roadway surfaces as required for the CONTRACTOR to complete the scope of work.

C. Cut, grade, and fill for Site drainage and final grading of the impoundment basin and dewatering cells and other miscellaneous areas of the site, as shown on the Project Drawings.

1.02 RELATED SECTIONS

A. Section 02222 - Excavating.

B. Section 02223 - Backfilling.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Backfill as specified in Section 02205.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify Site conditions.

B. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect utilities from damage.

D. Protect above and below grade utilities.

E. Protect bench marks, existing/remaining structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.03 BACKFILL

A. Excavate, transport, place, and compact excess material as shown on Project Drawings.

3.04 TOLERANCES

A. Elevations as shown on Project Drawings: ± 0.10 foot

3.06 FIELD QUALITY CONTROL

A. Field assessment and testing shall be performed under provisions of Section 01400.

3.07 SCHEDULES

A. Backfill

1. Maximum 6 inches compacted depth in impoundment basin.
2. A minimum of two passes in each direction with track equipment.

END OF SECTION

SECTION 02222
EXCAVATING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Excavation of excess material to lines and grades as shown on Project Drawings.

B. Excavation of dikes and ditches, as designated on the Project Drawings.

1.02 RELATED SECTIONS

A. Section 02211 - Rough Grading

B. Section 02223 - Backfilling

1.03 UNDERGROUND UTILITIES

A. Locate existing underground utilities before earthwork begins. Hand-dig exploratory pits where earthwork will occur near the utilities, and also at locations where offsets in utility lines are likely to exist. Have representative of respective utility and the ENGINEER present during this exploratory work.

B. Comply with utility rules, permitting requirements, and directives for excavation work.

C. Protect exposed utility lines from damage.

D. Completeness and accuracy of underground utilities information presented on the Project Drawings are not guaranteed.

1.04 FIELD MEASUREMENTS

A. Verify grades and dimensions shown on Project Drawings as existing. Should discrepancies exist between actual conditions and those shown, notify ENGINEER and clarify the discrepancies.

B. Grades and elevations indicated are not intended to represent a balance between cut and fill. Bring subgrades, when compacted, to the grades and elevations so indicated on the Project Drawings.

1.05 PROTECTION

A. Protect benchmarks, existing structures, groundwater monitoring wells, fences, vegetation to remain in-place, and other site amenities from damage caused by CONTRACTOR's equipment and vehicular traffic.

B. Protect above grade utilities which are to remain.

C. Notify ENGINEER of unexpected subsurface conditions and discontinue affected work in area until notified to resume Work.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, grades, and datum. Excavation shall be within ± 0.10 foot of the grades shown on the Project Drawings.

B. Locate, identify, and protect underground utilities from damage.

C. Protect existing structures from excavation equipment and vehicular traffic.

D. Length of excavation open at any one time shall be controlled by site conditions and are subject to any limits that may be prescribed by the ENGINEER.

E. Open excavation shall be kept to a minimum.

3.02 EXCAVATION

A. Excavate the soil in the areas shown on the Project Drawings to the grades shown on the Project Drawings.

B. No excavation materials shall be removed from the site or disposed of off-site by the CONTRACTOR and/or CONTRACTOR's subcontractors.

C. Complete all excavation regardless of the type of materials encountered. CONTRACTOR shall make his own estimate of the kind and extent of the various materials, which will be encountered in the excavation.

D. Grade top perimeter of excavation to prevent surface water from draining into excavation.

E. Notify ENGINEER of unexpected subsurface conditions and discontinue affected work in area until directed by ENGINEER to resume work.

F. Correct areas overexcavated in accordance with Section 02223.

3.03 FIELD QUALITY CONTROL

A. Field assessment shall be performed under the provisions of Section 01400 - Quality Control and Section 01410 - Testing Laboratory Services.

B. Provide for visual assessment of bearing surfaces.

3.04 PROTECTION

A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.

END OF SECTION

SECTION 02223
BACKFILLING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Backfill to grade elevations as shown on Project Drawings.

B. Backfill to grade elevation at all other locations to promote positive drainage, as shown on Project Drawings.

1.02 RELATED SECTIONS

A. Section 02205 - Soil Materials.

B. Section 02222 - Excavating.

1.03 REFERENCES

A. ASTM D422 - Particle Size Analysis of Soils.

1.04 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Section 02205 - Soil Materials.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that areas to be filled are free of roots, organics, deleterious debris, water, or any obstructions that may hinder the proper placement and compaction of fill materials.

3.02 BACKFILLING

A. Place backfill materials to the lines and grades shown on the Project Drawings. Soil shall be placed in loose lifts approximately 8 inches thick. Compacted soil fill lift thickness (after compaction) shall not exceed 6 inches.

B. Compaction of lifts shall be performed with appropriately heavy tracked equipment (such as a CAT 815 or equivalent) subject to approval of the ENGINEER or his designated representative CONTRACTOR shall build a ramp for equipment access as needed. The required number of passes shall be determined in the field based on visual assessment, but

shall not be less than four passes. A pass is defined as one trip of the compacting equipment over the lift and back to the starting point by the compacting equipment.

C. The daily work area shall extend a distance so as to maintain moist soil conditions (facilitate bonding) and continuous operations as best possible. Desiccation and crusting of the lift surface shall be avoided as much as possible. If, in the judgment of the ENGINEER or his designated representative, desiccation and crusting of the lift surface occurs before placement of the next lift, this area shall be scarified to a sufficient depth to mix with moist materials, or sprinkled with water and then scarified. Compaction shall not proceed until this water in uniformly absorbed into the soil and the moisture content is in the specified range.

D. Place backfill soil in locations as specified on the Project Drawings.

E. Systematically backfill to allow maximum time for natural settlement. Do not backfill over material that has become porous, wet, or spongy.

F. Employ a placement method that does not disturb or damage other Work.

G. Slope grades as shown on Project Drawings.

H. Make gradual grade changes. Blend slope into level areas.

3.03 TOLERANCES

A. Rough Grade: ± 0.10 foot.

3.04 FIELD QUALITY CONTROL

A. Field assessment and testing shall be performed under provisions of Section 01400 - QUALITY CONTROL and Section 01410 - TESTING LABORATORY SERVICES.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at CONTRACTOR's expense until the compaction specification is achieved.

3.05 PROTECTION OF FINISHED WORK

A. Protect finished Work.

B. Reshape and recompact fills subject to vehicular traffic.

3.06 SCHEDULE

A. Backfill

1. Soil type to finish grade. Lift thickness not to exceed 8 inches loose.

END OF SECTION

SECTION 02231
CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 DESCRIPTION

The Work covered by this section consists of furnishing all labor, materials, tools and equipment, and incidentals necessary for clearing and grubbing areas in the OWNER surface impoundment basin and dewatering cells.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 PROTECTION

A. Roads and Walks - Keep roads and walks free of dirt and debris at all times.

B. Trees, Shrubs, and Existing Facilities - Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

C. Utility Lines - Protect from damage existing utility lines that are indicated to remain. Notify the OWNER immediately of damage to or an encounter with an unknown existing utility line. The CONTRACTOR shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the CONTRACTOR prior to start of clearing and grubbing operations. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the Contracting Officer in ample time to minimize interruption of the service.

3.02 CLEARING

A. Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 40 mm (1-1/2 inches or more) in diameter and shall be trimmed of all branches (the heights indicated or directed). Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Cuts more than 40 mm (1-1/2 inches) in diameter shall be painted with an approved tree-wound paint. Apply herbicide in accordance with the manufacturers label to the top surface of stumps designated not to be removed.

3.03 TREE REMOVAL

A. Where indicated or directed, trees and stumps that are designated as trees shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots, as specified in paragraph 3.05 (GRUBBING). Trees shall be disposed of as specified in paragraph 3.06 (DISPOSAL OF MATERIALS).

3.04 PRUNING

A. Trim trees designated to be left standing within the cleared areas of dead branches 38 mm (1-1/2 inches or more) in diameter, and trim branches to heights and in a manner as indicated. Neatly cut limbs and branches to be trimmed close to the bole of the tree or main branches. Paint cuts more than 32 mm (1-1/4 inches) in diameter with an approved tree wound paint.

3.05 GRUBBING

A. Grubbing shall consist of the removal and disposal of stumps, roots larger than 75 mm (3 inches) in diameter, and matted roots from the designated grubbing areas. Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 455 mm (18 inches) below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings and areas to be paved. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform to the original adjacent surface of the ground.

3.06 DISPOSAL OF MATERIALS

A. Non-Saleable Materials - Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations, except for salable timber, shall be disposed of off site at an approved Class III construction debris landfill.

END OF SECTION

SECTION 02240
MECHANICAL DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work covered by this Section consists of furnishing, unloading at the job site, handling, storage, and installing a complete mechanical sludge dewatering system, including any generator and/or fuel necessary to complete with ancillary materials and equipment, as required to meet the specified performance requirements. Limited power supply is available in the project area. CONTRACTOR will be responsible for any power required to mechanically dewater the material.

B. The dewatering of sludges in the Impoundment Basin shall occur in two distinct areas, the West Cell and the South Cell. Alternate dewatering locations for staging mechanical dewatering equipment shall be approved by OWNER.

1.02 RELATED WORK

A. Section 01600 - Material and Equipment.

1.03 REFERENCES

A. U.S. Environmental Protection Agency Test Method 9095A "Paint Filter Liquids Test"

1.04 QUALITY ASSURANCE

A. All components of the mechanical sludge dewatering equipment shall be engineered for long, continuous, and uninterrupted service. Provisions shall be made for easy lubrication, adjustment, or replacement of all parts. Corresponding parts of multiple units shall be interchangeable.

B. All materials, procedures, operations, and methods shall be subjected to the quality control monitoring as detailed herein. The dewatering area shall be confined within the limits of the dewatering area indicated on the Project Drawings and Specifications, except as otherwise authorized in writing by OWNER or its ENGINEER.

C. Consideration will be given only to products of manufacturers who can demonstrate that their equipment fully complies with all requirements of the specifications and contract documents. The equipment shall be supplied by a firm which has been regularly engaged in the design, fabrication, assembly, testing, start-up, and service of full-scale mechanical dewatering equipment, operating in the U.S., with similar sludges, for a period of not less than ten (10) years prior to the bid date of this contract. The bidder shall submit data to substantiate the manufacturer's experience in accordance with the contract documents.

D. The CONTRACTOR shall comprehend and anticipate the construction quality assurance (CQA) activities and account for these activities in the installation schedule.

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the Dewatering Work Plan (DWP) to the OWNER and ENGINEER as described in Paragraph 3.02 of this Section.

B. Method for verifying volume of dewatered sludges.

C. It is the CONTRACTOR'S responsibility to ensure that dewatered sludges meet the performance requirements of Paragraph 3.03 of this Section. Any material that does not meet the standards of this section will be rejected by OWNER or its ENGINEER and shall be reprocessed at no cost to OWNER.

D. All materials, procedures, operations, and methods shall be in conformance with the DWP, Project Drawings, and Specifications and shall be subject to quality control monitoring as detailed herein.

1.06 HEALTH AND SAFETY

A. The CONTRACTOR shall develop and implement the Contractor Health and Safety Plan (CHASP) for all dewatering activities to protect on-site personnel. The CHASP shall be prepared in accordance with OWNER's requirements provided as part of the Contract Documents.

B. The CONTRACTOR shall implement the CHASP and other safety requirements as required by other sections of the Contract Documents.

C. Work procedures shall conform with all applicable federal, state and local regulations (latest editions).

D. Reported compounds and concentrations and physical characteristics within various media are provided in Exhibit D of this Technical Specifications document.

1.07 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. All materials shall be delivered clean and free from debris, in a state ready to be connected to a power source to begin operations, and shall be handled to prevent contamination, segregation, or damage.

B. The storage location of all materials shall not interfere with construction activities and shall be approved by OWNER.

C. Dewatering agents to include, but not limited to, polymer totes shall be stored in weather-tight enclosures to protect against dampness and contamination.

1.08 SLUDGE THICKNESS

A. Sludge thicknesses shown on Project Drawings were established by previous probing investigations conducted in April 2010.

1.09 PATENTS

A. The CONTRACTOR warrants that the use of this system and its equipment, in the process for which the system has been expressly designed, will not infringe any U.S. or foreign patents or patents pending. In the event of any claim of infringement, the manufacturer shall defend and indemnify the owner free from any liabilities associated with the use of the patented equipment or process.

1.10 CONDITIONS OF SERVICE

A. The mechanical sludge dewatering equipment shall be designed to adequately condition and dewater the sludge so that a dewatered sludge cake is produced that easily discharges from the dewatering unit without blinding and that may be handled by the conveying equipment.

Each unit shall be designed to operate in the environment for which it is intended, continuously or intermittently on demand, and shall perform the required dewatering operations without spillage of water or sludge beyond the nominal machine envelope.

The sludge to be dewatered is a by-product of historic plant operations. Analytical data from samples collected in April 2010 of the sludge to be fed to the mechanical dewatering equipment is contained in Exhibit C of this Technical Specification document.

1.11 PERFORMANCE REQUIREMENTS

A. The sludge dewatering equipment shall be capable of meeting the following minimum performance criteria:

1. Delivery of a dewatered material that passes the Paint Filter Test.
2. Delivery of a dewatered material that is at least 42 % solids.

PART 2 - MATERIALS

2.01 MATERIALS AND COATINGS

A. All materials used in the construction of the sludge dewatering equipment shall be of the best quality and entirely suitable in every respect for the service required. Materials shall conform to the ASTM Specifications where such specifications exist and the use of such materials shall be based on continuous and successful use under similar conditions of service.

All electrical components shall be U.L. listed where such listing exists and all electrical control panels shall be assembled in UL approved facilities. All electrical control panels and components shall be subject to inspection and approval by OWNER personnel. Electrical control panels and/or electrical components not approved by OWNER will not be allowed to be operated onsite.

2.02 SLUDGE CONDITIONING SYSTEM

A. Each mechanical dewatering device equipped with a sludge conditioning system shall be designed to efficiently mix the polymer, if required, w ith the sludge and to adequately condition the sludge, for optimum dewatering.

The sludge conditioning system shall be mounted upstream of the dewatering device and shall consist of an in-line, non-clog, static mixer with a variable orifice and a vortex polymer injection ring, or equivalent. The CONTRACTOR shall be required to provide, to the ENGINEER, a proper layout for the system. The sludge conditioning system shall be capable of providing the following performance:

1) The polymer and sludge must be instantly mixed (less than 1.0 second at 60 GPM).
2) Mixing energy must be independently adjustable during operation.
3) Flocculation time must be independently adjustable.

The CONTRACTOR shall be required to demonstrate, during the startup and calibration phase, that flocculation time can be adjusted by one man, within 60 minutes.

The polymer mixer shall be designed specifically for its intended use. The use of modified check valves or mixers requiring electrical motors and controls shall not be acceptable to this specification.

B. Each mechanical dewatering device shall be provided with a control panel that will contain the necessary control devices and equipment for controlling the dewatering process. Located on the front of the control panel shall be a CONTROL POWER OFF/ON switch. When in the ON position, the CONTROL POWER ON pilot light will be illuminated and control power shall be distributed to the control system. When in the OFF position, the control system shall be held de-energized. Also located on the control panel shall be an EMERGENCY STOP pushbutton. An alarm horn shall be included for audible alarm annunciation.

2.03 DEWATERING REAGENTS

A. All material used in the dewatering process shall meet or exceed the standards defined in ASTM, or other standards as appropriate. CONTRACTOR shall provide a list of ASTM methods that apply to the selected reagent(s) to the ENGINEER as part of the Work Plan required in Paragraph 3.02 of this Section.

B. Water, for bidding purposes, shall be obtained from an on-site water supply designated by the ENGINEER. ENGINEER will designate well l ocations on the site for water supply. CONTRACTOR shall be responsible for water connection and transport to the Work site.

C. The minimum percentage by weight of the dewatering reagent(s) shall be designated by the CONTRACTOR. Reagent(s) and ratio(s) shall be submitted to OWNER and ENGINEER as part of the Work Plan required in Paragraph 3.02 of this Section. Reagents shall be capable of meeting the performance criteria presented in Paragraph 3.03 of this Section.

D. Dewatering reagent(s) shall be supplied from the same supplier/source for the duration of activities, unless an alternate supplier/source is submitted and acceptable to the OWNER or

its ENGINEER. CONTRACTOR shall submit to the OWNER and ENGINEER for acceptance certified laboratory test results documenting that the material supplied by the alternate supplier/source shall meet performance criteria prior to changing suppliers.

PART 3 - EXECUTION

3.01 SLUDGE CHARACTERIZATION

A. The sludges have been characterized through completion of a bench scale treatability study. Dewatering of representative sludge samples resulted in gravity dewatering producing a dewatered sludge capable of passing the Paint Filter Test (USEPA SW846 9095A). Performance criteria are presented in Paragraph 3.03 of this Section.

B. The in-place sludge volumes to be dewatered from the IB basin are listed below:

	Cubic yards	Color	Consistency
Upper Layer	3,800	Black	Liquidy
Lower Layer	900	Tan	Firm

Exhibits C and D provide additional chemical and physical characteristics.

3.02 WORK PLAN

A. The CONTRACTOR shall submit a DWP to the OWNER and ENGINEER as part of the bid response. The DWP shall describe the dewatering process including, but not limited to, equipment, reagent(s) with appropriate ASTM designations, ratio(s), mixing methods, storm water run-on and runoff controls, decontamination procedures, construction sequence, proposed schedule, and any other pertinent information deemed necessary to fully convey what dewatering activities will be performed to the ENGINEER and OWNER.

B. The CONTRACTOR shall establish a phasing schedule for the dewatering of the sludges to ensure continuous operations. The OWNER or its ENGINEER shall accept the phasing schedule before initiation of the full-scale implementation.

C. All information submitted by CONTRACTOR as part of the DWP shall be considered confidential by the ENGINEER and OWNER.

3.03 PERFORMANCE CRITERIA

A. The dewatered material must meet the requirements of the Paint Filter Test (USEPA SW846 9095A), passing the test both on-site prior to transport and at the landfill.

B. The dewatering material must contain a minimum of __42%__ solids at the site and at the landfill.

3.04 INSPECTION

A. The CONTRACTOR is responsible for the collection of any samples necessary to conduct any bench scale tests. The CONTRACTOR shall verify the volume of sludges to be

dewatered. Method of measuring and calculating the volume shall be submitted to OWNER and ENGINEER prior to implementation. OWNER or its ENGINEER shall be present for all field measurements. The CONTRACTOR shall notify OWNER and ENGINEER if volume exceeds 10 percent of estimated in-place volume or weight provided for bidding purposes.

B. At the beginning of each day's work, the CONTRACTOR shall inspect the previously dewatered sludge and take whatever corrective action, if any, that the OWNER or its ENGINEER deems appropriate, to meet performance criteria. These action(s) shall be performed at no extra cost to OWNER.

C. The CONTRACTOR shall verify at the end of each working day that the ground surface near the dewatered sludge in the staging area is free of potential moisture-trapping indentations and that surface drainage will be off of and away from the dewatered sludges.

3.05 FIELD DEMONSTRATION

A. The Field Demonstration is required to provide the CONTRACTOR with operational information, an opportunity to refine the sludge-reagent mix ratio, and ensure that the dewatering reagents, mixture methods and sludge characteristics are adequate to meet performance criteria. Dewatering reagents, equipment, and procedures for the Field Demonstration shall be the same as intended for the full-scale dewatering of sludges present in the Impoundment Basin as presented in the DWP. The Field Demonstration of the dewatering shall not be conducted in inclement weather.

B. The CONTRACTOR shall provide all personnel, equipment, and materials to perform dewatering during the Field Demonstration consistent with the DWP. OWNER or its ENGINEER shall be present to observe the dewatering process.

C. The construction area for the Field Demonstration shall be located in agreement with the ENGINEER and OWNER.

D. The CONTRACTOR shall document the methods, materials, and equipment used to dewater the sludges during the Field Demonstration.

E. The CONTRACTOR shall ensure control of noxious odors. Odor control may be accomplished by one or more of the following methods. The CONTRACTOR in conjunction with OWNER and ENGINEER shall evaluate the effectiveness of the applied odor control and may require additional action by the CONTRACTOR.

1. A deodorant shall be mixed with the sludge using an in-line mixer at the quantity sufficient to reduce odors at the nearest fence line.

2. A foam shall be applied to cover sludge exposed to the atmosphere. The sludge shall be reapplied as necessary to reduce at the nearest fence line odors emanating from the sludge.

3. Another method of odor abatement may be used with prior approval from OWNER.

F. The CONTRACTOR shall provide the results to the OWNER and ENGINEER for review and approval prior to full-scale implementation. If the dewatered sludges do not meet required

specifications, the CONTRACTOR shall review the procedures with OWNER and ENGINEER and perform another Field Demonstration to confirm performance criteria will be satisfied. The additional Field Demonstration shall be performed at no additional cost to the OWNER.

3.06 FULL-SCALE DEWATERING IMPLEMENTATION

A. The CONTRACTOR shall conduct dewatering within the dewatering cells upon acceptable results from the Field Demonstration.

B. The CONTRACTOR shall provide all personnel, equipment, and materials to perform full-scale implementation of Impoundment Basin sludge dewatering.

C. The CONTRACTOR shall dewater sludges in accordance with the construction sequence and schedule included in the DWP and submitted to the OWNER and ENGINEER. Access to completed areas of dewatered sludges shall be left in a condition conducive to equipment entry into those locations for grading operations.

D. The CONTRACTOR shall dewater the sludges within the limits of the Impoundment Basin as delineated on the Project Drawings.

E. The CONTRACTOR shall ensure control of noxious odors. The CONTRACTOR in conjunction with the OWNER and ENGINEER shall evaluate the effectiveness of the applied odor control and may require additional action by the CONTRACTOR.

F. The CONTRACTOR shall collect samples of the dewatered sludge and place them in an appropriate apparatus for subsequent testing. The samples shall be collected in such a manner that the tested portions are representative of the majority of the dewatered material. The CONTRACTOR shall perform paint filter tests on the samples at the following frequency to confirm that the dewatered sludges meet required specifications:

Parameter	ASTM Test Method	Frequency
Paint Filter Test	SW 846 9095A	As directed, or at a minimum of once for every material load transported offsite.
Toxicity Characteristic	SW	As necessary to complete a waste profile as required by the landfill and as directed.
Percent Solids	ASTM D2216	As directed, or at a minimum of once for every material load transported offsite.

The dewatered sludges shall meet the performance criteria presented in Paragraph 3.03 of this Section.

G. The CONTRACTOR shall provide the results to the OWNER and ENGINEER for review as they are made available. If the dewatered sludges do not meet performance criteria, the CONTRACTOR shall review the procedures with the OWNER and ENGINEER and reprocess the dewatered sludges, as required. Additional samples will be collected, and analyzed for the paint filter test. The OWNER and ENGINEER shall review the results and verify that dewatering of the sludges has been achieved before the CONTRACTOR proceeds to the next area. The reprocessing of the sludges and testing of additional samples shall be at no additional cost to the OWNER.

H. The CONTRACTOR shall stack the dewatered sludges in a staging area in such a manner as to enable efficient loading for off-site transport. The OWNER and ENGINEER shall be notified immediately if the staging area requirements are not attainable.

I. The CONTRACTOR shall obtain approval from the OWNER or its ENGINEER that the dewatering of the sludges within the basins have achieved the performance criteria before demobilizing equipment from the Site. Any additional dewatering required will be conducted at no additional cost to the OWNER.

3.07 DECONTAMINATION

A. Equipment used for dewatering shall remain dedicated for the duration of these activities and maintained within the exclusion zone.

B. Prior to the demobilization of the equipment, it shall be decontaminated in accordance with the procedures provided in the DWP.

C. OWNER or its ENGINEER shall be present for decontamination activities and shall be provided copies of all test results necessary to document effectiveness before removing equipment from the site.

D. Decontamination shall be performed at a location designated by the OWNER. If required, a temporary decontamination pad shall be constructed. Liquids will be collected and disposed of at a location designated by the OWNER.

3.08 WATER MANAGEMENT

A. Remove and manage storm and other accumulated water from the basins during dewatering activities in accordance with DWP developed by the CONTRACTOR. Accumulated storm water shall be discharged to the existing facility's industrial sewer (MDEQ Water Pollution Control Permit No. MSP091286). Sampling will be conducted by CONTRACTOR.

END OF SECTION

SECTION 02250
SOLIDIFICATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work covered by this Section consists of furnishing all labor, materials, tools, equipment, and incidentals necessary for solidification of the impoundment basin sludges to obtain material suitable for transport to an off-site landfill.

B. The solidification of sludges shall occur in three distinct phases, as follows:

1. Laboratory/Bench Study;
2. Field Demonstration; and
3. Full-Scale Implementation.

1.02 RELATED WORK

A. Section 02222 - Excavating.

B. Section 02223 - Backfilling.

1.03 REFERENCES

A. U.S. Environmental Protection Agency Test Methods for Evaluating Solid Waste Paint Filter Test Method No. 9095A

1.04 QUALITY ASSURANCE

A. All materials, procedures, operations, and methods shall be in strict conformance with the Project Drawings and Specifications and shall be subjected to the quality control monitoring as detailed herein. The sludge area to be solidified shall conform exactly to the Project Drawings and Specifications, except as otherwise authorized in writing by the OWNER or its ENGINEER.

B. The CONTRACTOR shall comprehend and anticipate the Construction Quality Assurance (CQA) activities and account for these activities in the installation schedule.

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the Solidification Work Plan (SWP) to the OWNER and ENGINEER as described in Paragraph 3.02 of this Section.

B. Method for verifying volume of sludges to be solidified.

C. It is the CONTRACTOR'S responsibility to ensure that solidified sludges meet the requirements of this Specification. Any material that does not meet the standards of this

section will be rejected by the OWNER or its ENGINEER and shall be reprocessed at no cost to the OWNER.

D. All materials, procedures, operations, and methods shall be in conformance with the SWP, Project Drawings, and Specifications and shall be subject to quality control monitoring as detailed herein.

E. The CONTRACTOR shall comprehend and anticipate the CQA activities and account for these activities in the construction schedule.

1.06 HEALTH AND SAFETY

A. The CONTRACTOR shall develop and implement the Contractor Health and Safety Plan (CHASP) for all stabilization/solidification activities to protect on-site personnel. Air emissions may be generated during the Work and contact with affected soil, sludges, and water is expected. The CHASP shall be prepared in accordance with OWNER requirements provided as part of the Contract Documents.

B. The CONTRACTOR shall implement the CHASP and other safety requirements as required by other sections of the Contract Documents.

C. Work procedures shall conform with all applicable federal, state, and local regulations (latest editions).

D. Reported compounds and concentrations within various media are provided in Exhibit D.

1.07 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. All materials shall be delivered in undamaged, unopened containers bearing the manufacturer's original label and shall be handled to prevent contamination, segregation, or damage.

B. The storage location of all materials shall not interfere with construction activities and shall be approved by the COMPANY.

C. Solidification agent shall be stored in weather-tight enclosures to protect against dampness and contamination.

1.08 SEDIMENT THICKNESS

A. Sludge thicknesses shown on Project Drawings were established by a probing investigation conducted in April 2010.

PART 2 - MATERIALS

2.01 SOLIDIFICATION REAGENTS

A. All material used in the solidification process shall meet or exceed the standards defined in American Society for Testing and Materials (ASTM), or other standards as appropriate.

CONTRACTOR shall provide a list of ASTM methods that apply to the selected reagent(s) to the ENGINEER as part of the Work Plan required in Paragraph 3.02 of this Section.

B. Water, for bidding purposes, shall be obtained from an on-site water supply designated by the OWNER. OWNER will designate hydrant locations on the site for water supply. CONTRACTOR shall be responsible for water connection and transport to the Work site.

C. The minimum percentage by weight of the solidification reagent(s) shall be designated by the CONTRACTOR. Reagent(s) and ratio(s) shall be submitted to the OWNER and ENGINEER as part of the Work Plan required in Paragraph 3.02 of this Section. Reagents shall be capable of meeting the performance criteria presented in Paragraph 3.03 of this Section.

D. Solidification reagent(s) shall be supplied from the same supplier/source for the duration of activities, unless an alternate supplier/source is submitted and acceptable to the OWNER or its ENGINEER. CONTRACTOR shall submit to the OWNER and ENGINEER for acceptance certified laboratory test results documenting that the material supplied by the alternate supplier/source shall meet performance criteria prior to changing suppliers.

PART 3 - EXECUTION

3.01 LABORATORY/BENCH STUDY

A. As part of the bidding process, the CONTRACTOR shall conduct a laboratory/bench study to determine reagent(s) and mixing ratios necessary to meet performance criteria listed in Paragraph 3.03 of this Section. Samples shall be collected by the CONTRACTOR as part of the pre-bid meeting or as scheduled with the OWNER.

B. If bulking of the sludge volume by the reagent(s) exceeds the performance criteria presented in Paragraph 3.03 of this Section, CONTRACTOR shall provide anticipated volume increase.

C. Verify thickness and volume of sludge to be solidified. Report any volume discrepancy to OWNER and ENGINEER.

3.02 WORK PLAN

A. The CONTRACTOR shall submit a Solidification Work Plan (SWP) to the OWNER and ENGINEER as part of the bid response. The SWP shall describe the solidification process including, but not limited to, equipment, reagent(s) with appropriate ASTM designations, ratio(s), mixing methods, bench/laboratory study results, dust and volatile emissions controls, storm water run-on and runoff controls, decontamination procedures, construction sequence, proposed schedule, and any other pertinent information deemed necessary to fully convey what solidification activities will be performed to the ENGINEER and OWNER.

B. The CONTRACTOR shall establish a phasing schedule for the solidification of the sludges to ensure an adequate curing period before the solidified material is transported offsite.

The phasing schedule shall allow for continuous solidification of the sludges. The OWNER or its ENGINEER shall accept the phasing schedule before initiation of the full-scale implementation.

C. All information submitted by CONTRACTOR as part of the SWP shall be considered confidential by the ENGINEER and OWNER.

3.03 PERFORMANCE CRITERIA

A. Clean-Closure Option

1. Bulking of solidified sludges shall be kept to a maximum of 10 percent by weight.

2. Paint Filter Test (USEPA SW846 9095A) on site and at the landfill.

3.04 INSPECTION

A. The CONTRACTOR shall verify the volume of sludges to be solidified. CONTRACTOR is responsible for the collection of any samples required to conduct bench scale testing to verify mix designs. Method of measuring and calculating the volume shall be submitted to the OWNER and ENGINEER prior to implementation. OWNER or its ENGINEER shall be present for all field measurements. The CONTRACTOR shall notify the OWNER and ENGINEER if volume exceeds 10 percent of estimated in-place volume provided for bidding purposes.

B. At the beginning of each day's work, the CONTRACTOR shall inspect the previously solidified sludge and take whatever corrective action, if any, that the OWNER or its ENGINEER deems appropriate to meet performance criteria. T hese action(s) shall be performed at no extra cost to the OWNER.

C. The CONTRACTOR shall verify at the end of each working day that the solidified sludge is free of potential moisture-trapping indentations and that surface drainage will be off of and away from the solidified sludges and areas soon to be solidified.

D. The CONTRACTOR shall remove equipment from the areas solidified on that working day to allow curing of the sludges to achieved the paint filter test requirement.

3.05 FIELD DEMONSTRATION

A. The Field Demonstration is required to provide the CONTRACTOR with operational information, an opportunity to refine the sludge-reagent mix ratio, and ensure that the solidification reagents, mixture methods, and solidified sludge characteristics are adequate to meet performance criteria. Solidification reagents, equipment, and procedures for the Field Demonstration shall be the same as intended for the full-scale solidification of impoundment basin sludges as presented in the SWP. The Field Demonstration of the solidification shall not be conducted in inclement weather.

B. The CONTRACTOR shall provide all personnel, equipment, and materials to perform solidification during the Field Demonstration consistent with the SWP. The OWNER or its ENGINEER shall be present to observe the solidification process.

C. The construction area for the Field Demonstration shall be located in agreement with the ENGINEER and OWNER.

D. The CONTRACTOR shall document the methods, materials, and equipment used to solidify the sludges during the Field Demonstration.

E. The CONTRACTOR shall evaluate the bulking characteristic of the solidified sludges to develop construction procedures for the full-scale implementation of solidification to meet performance criteria and to promote a continuous operation each working day.

F. The CONTRACTOR shall perform paint filter analysis for solidified sludges from the Field Demonstration. A sample from a minimum of two separate locations within each demonstration area shall be collected and analyzed. The samples will be visually evaluated for mixing uniformity at the time of collection. Test data will be compared for two samples to confirm visual determination of uniformity in the treated sludges and performance criteria.

G. The CONTRACTOR shall ensure control of noxious odors. The CONTRACTOR in conjunction with the OWNER and ENGINEER shall evaluate the effectiveness of the applied odor control and may require additional action by the CONTRACTOR.

H. The CONTRACTOR shall provide the results to the OWNER and ENGINEER for review and approval prior to full-scale implementation. If the solidified sludges do not meet required specifications, the CONTRACTOR shall review the procedures with the OWNER and ENGINEER and perform another Field Demonstration to confirm performance criteria will be satisfied. The additional Field Demonstration shall be performed at no additional cost to the OWNER.

3.06 FULL-SCALE SOLIDIFICATION IMPLEMENTATION

A. The CONTRACTOR shall conduct solidification of the impoundment basin sludge upon acceptable results from the Field Demonstration.

B. The CONTRACTOR shall provide all personnel, equipment, and materials to perform full-scale implementation of the solidification of the impoundment basin sludge.

C. The CONTRACTOR shall solidify sludges in accordance with the construction sequence and schedule included in the SWP and submitted to the OWNER and ENGINEER.

D. The CONTRACTOR shall solidify the sludges within the limits of the impoundment basin as delineated on the Project Drawings.

E. The CONTRACTOR shall ensure control of noxious odors and particulate emissions. The CONTRACTOR in conjunction with the OWNER and ENGINEER shall evaluate the effectiveness of the applied odor control and dust suppression and may require additional action by the CONTRACTOR.

F. The CONTRACTOR shall collect samples of the treated sludge and analyze them for free liquid content by the paint filter test. The samples shall be collected in such a manner that the column of solidified sludge can be visually assessed and a representative section of the column can be selected for sampling. The CONTRACTOR shall perform paint filter analyses on the samples at the following frequency to confirm that the solidified sludges meet required specifications:

Parameter	ASTM Test Method	Frequency
Clean Closure Paint Filter Test	SW 846 9095A	once for every material load transported offsite for landfill acceptance

The solidified sludges shall have met the performance criteria presented in Paragraph 3.03 of this Section.

G. The CONTRACTOR shall provide the results to the OWNER and ENGINEER for review as they are made available. If the solidified sludges do not meet performance criteria, the CONTRACTOR shall review the procedures with the OWNER and ENGINEER and reprocess the solidified sludges, as required. Additional samples will be collected, cured, and analyzed for the paint filter test. The OWNER and ENGINEER shall review the results and verify that solidification of the sludges has been achieved before the CONTRACTOR proceeds to the next area. The reprocessing of the solidified sludges and testing of additional samples shall be at no additional cost to the OWNER.

3.07 DECONTAMINATION

A. Equipment used for solidification shall remain dedicated for the duration of these activities and maintained within the exclusion zone.

B. Prior to the demobilization of the equipment, it shall be decontaminated in accordance with the procedures provided in the SWP.

C. OWNER or its ENGINEER shall be present for decontamination activities and shall be provided copies of all test results necessary to document effectiveness before removing equipment from the site.

D. Decontamination shall be performed at a location designated by the OWNER. If required, a temporary decontamination pad shall be constructed. Liquids will be collected and disposed of at a location designated by the OWNER.

3.08 WATER MANAGEMENT

A. Remove and manage storm and other accumulated water from the basins during in-situ solidification activities in accordance with the SWP developed by the CONTRACTOR. Accumulated storm water shall be discharged to the existing facility's industrial sewer (NPDES permit MSP091286).

Sampling will be conducted by OWNER or OWNER's representative.

END OF SECTION

SECTION 02252
GRAVITY DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work covered by this Section consists of furnishing all labor, materials, tools, equipment, and incidentals necessary for Impoundment Basin sludges dewatering to obtain material suitable for transport to an off-site landfill.

B. The dewatering in the Impoundment Basin shall occur in two distinct areas, the West Cell and the South Cell. Alternate dewatering locations for staging mechanical dewatering equipment shall be approved by OWNER.

1.02 RELATED WORK

A. Section 02222 - Excavating.

B. Section 02223 - Backfilling.

1.03 REFERENCES

A. U.S. Environmental Protection Agency Test Methods for Evaluating Solid Waste Paint Filter Test Method No. 9095A

1.04 QUALITY ASSURANCE

A. All materials, procedures, operations, and methods shall be in strict conformance with the Project Drawings and Specifications and shall be subjected to the quality control monitoring as detailed herein. The sludge area to be dewatered shall conform exactly to the Project Drawings and Specifications, except as otherwise authorized in writing by the OWNER or its ENGINEER.

B. The CONTRACTOR shall comprehend and anticipate the Construction Quality Assurance (CQA) activities and account for these activities in the installation schedule.

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the Gravity Dewatering Work Plan (GDWP) to the OWNER and ENGINEER as described in Paragraph 3.02 of this Section.

B. Method for verifying volume of sludges to be dewatered.

C. It is the CONTRACTOR'S responsibility to ensure that dewatered sludges meet the requirements of this Specification. Any material that does not meet the standards of this section will be rejected by the OWNER or its ENGINEER and shall be reprocessed at no cost to the OWNER.

D. All materials, procedures, operations, and methods shall be in conformance with the GDWP, Project Drawings, and Specifications and shall be subject to quality control monitoring as detailed herein.

E. The CONTRACTOR shall comprehend and anticipate the CQA activities and account for these activities in the construction schedule.

1.06 HEALTH AND SAFETY

A. The CONTRACTOR shall develop and implement the Contractor Health and Safety Plan (CHASP) for all stabilization/gravity dewatering activities to protect on-site personnel. Air emissions may be generated during the Work and contact with affected soil, sludges, and water is expected. The CHASP shall be prepared in accordance with OWNER requirements provided as part of the Contract Documents.

B. The CONTRACTOR shall implement the CHASP and other safety requirements as required by other sections of the Contract Documents.

C. Work procedures shall conform with all applicable federal, state, and local regulations (latest editions).

D. Reported compounds and concentrations within various media are provided in Exhibit D.

1.07 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. All materials shall be delivered in undamaged, unopened containers bearing the manufacturer's original label and shall be handled to prevent contamination, segregation, or damage.

B. The storage location of all materials shall not interfere with construction activities and shall be approved by the OWNER.

C. Gravity dewatering agent shall be stored in weather-tight enclosures to protect against dampness and contamination.

1.08 SEDIMENT THICKNESS

A. Sludge thicknesses shown on Project Drawings were established by a probing investigation conducted in April 2010.

PART 2 - MATERIALS

2.01 SOLIDIFICATION REAGENTS

A. All material used in the gravity dewatering process shall meet or exceed the standards defined in American Society for Testing and Materials (ASTM), or other standards as appropriate. CONTRACTOR shall provide a list of ASTM methods that apply to the selected reagent(s) to the ENGINEER as part of the Work Plan required in Paragraph 3.02 of this Section.

B. Water, for bidding purposes, shall be obtained from an on-site water supply designated by the OWNER. OWNER will designate hydrant locations on the site for water supply. CONTRACTOR shall be responsible for water connection and transport to the Work site.

PART 3 - EXECUTION

3.01 LABORATORY/BENCH STUDY

A. As part of the bidding process, the CONTRACTOR shall conduct a laboratory/bench study to determine reagent(s) and mixing ratios necessary to meet performance criteria listed in Paragraph 3.03 of this Section. Samples shall be collected by the CONTRACTOR as part of the pre-bid meeting or as scheduled with the OWNER.

B. If the gravity dewatering percent solids is less than the performance criteria presented in Paragraph 3.03 of this Section, CONTRACTOR shall provide the achieved percent solids to ENGINEER.

C. Verify thickness and volume of sludge to be dewatered. Report any volume discrepancy to OWNER and ENGINEER.

3.02 WORK PLAN

A. The CONTRACTOR shall submit a Gravity Dewatering Work Plan (GDWP) to the OWNER and ENGINEER as part of the bid response. The GDWP shall describe the gravity dewatering process including, but not limited to, dewatering cell construction, equipment, reagent(s) with appropriate ASTM designations, ratio(s), mixing methods, bench/laboratory study results, dust and volatile emissions controls, storm water run-on and runoff controls, decontamination procedures, construction sequence, proposed schedule, and any other pertinent information deemed necessary to fully convey what gravity dewatering activities will be performed to the ENGINEER and OWNER.

B. The CONTRACTOR shall establish a phasing schedule for the gravity dewatering of the sludges to ensure an adequate curing period before the gravity dewatering material is transported offsite.

The phasing schedule shall allow for continuous gravity dewatering of the sludges. The OWNER or its ENGINEER shall accept the phasing schedule before initiation of the full-scale implementation.

C. All information submitted by CONTRACTOR as part of the GDWP shall be considered confidential by the ENGINEER and OWNER.

3.03 PERFORMANCE CRITERIA

A. The dewatered material must meet the requirements of the Paint Filter Test (USEPA SW846 9095A), passing the test both on-site prior to transport and at the landfill.

B. The dewatering material must contain a minimum of 42% solids at the site and at the landfill.

3.04 INSPECTION

A. The CONTRACTOR shall verify the volume of sludges to be dewatered. CONTRACTOR is responsible for the collection of any samples required to conduct bench scale testing to verify mix designs. Method of measuring and calculating the volume shall be submitted to the OWNER and ENGINEER prior to implementation. OWNER or its ENGINEER shall be present for all field measurements. The CONTRACTOR shall notify the OWNER and ENGINEER if volume exceeds 10 percent of estimated in-place volume provided for bidding purposes.

B. At the beginning of each day's work, the CONTRACTOR shall inspect the previously dewatered sludge and take whatever corrective action, if any, that the OWNER or its ENGINEER deems appropriate, to meet performance criteria. These action(s) shall be performed at no extra cost to the OWNER.

C. The CONTRACTOR shall verify at the end of each working day that the dewatered sludge is free of potential moisture-trapping indentations and that surface drainage will be off of and away from the solidified sludges and areas soon to be solidified.

D. The CONTRACTOR shall remove equipment from the areas dewatered on that working day to allow curing of the sludges to achieve the paint filter test requirement.

3.05 FIELD DEMONSTRATION

A. The Field Demonstration is required to provide the CONTRACTOR with operational information, an opportunity to refine the sludge-reagent mix ratio, and ensure that the gravity dewatering, mixture methods, and dewatered sludge characteristics are adequate to meet performance criteria. Gravity dewatering equipment, and procedures for the Field Demonstration shall be the same as intended for the full-scale gravity dewatering of impoundment basin sludges as presented in the GDWP. The Field Demonstration of the gravity dewatering shall not be conducted in inclement weather.

B. The CONTRACTOR shall provide all personnel, equipment, and materials to perform gravity dewatering during the Field Demonstration consistent with the GDWP. The OWNER or its ENGINEER shall be present to observe the gravity dewatering process.

C. The construction area for the Field Demonstration shall be located in agreement with the ENGINEER and OWNER.

D. The CONTRACTOR shall document the methods, materials, and equipment used to dewatering the sludges during the Field Demonstration.

E. The CONTRACTOR shall ensure control of noxious odors. Odor control may be accomplished by one or more of the following methods. The CONTRACTOR in conjunction with OWNER and ENGINEER shall evaluate the effectiveness of the applied odor control and may require additional action by the CONTRACTOR.

1. A deodorant shall be mixed with the sludge using an in-line mixer at the quantity sufficient to reduce odors at the nearest fence line.

2. A foam shall be applied to cover sludge exposed to the atmosphere. The sludge shall be reapplied as necessary to reduce at the nearest fence line odors emanating from the sludge.

3. Another method of odor abatement may be used with prior approval from OWNER.

F. The CONTRACTOR shall perform paint filter analysis for dewatered sludges from the Field Demonstration. A sample from a minimum of two separate locations within each demonstration area shall be collected and analyzed. The samples will be visually evaluated for mixing uniformity at the time of collection. Test data will be compared for two samples to confirm visual determination of uniformity in the treated sludges and performance criteria.

G. The CONTRACTOR shall ensure control of noxious odors. The CONTRACTOR in conjunction with the OWNER and ENGINEER shall evaluate the effectiveness of the applied odor control and may require additional action by the CONTRACTOR.

H. The CONTRACTOR shall provide the results to the OWNER and ENGINEER for review and approval prior to full-scale implementation. If the dewatering sludges do not meet required specifications, the CONTRACTOR shall review the procedures with the OWNER and ENGINEER and perform another Field Demonstration to confirm performance criteria will be satisfied. The additional Field Demonstration shall be performed at no additional cost to the OWNER.

3.06 FULL-SCALE SOLIDIFICATION IMPLEMENTATION

A. The CONTRACTOR shall conduct Impoundment Basin sludge dewatering upon acceptable results from the Field Demonstration.

B. The CONTRACTOR shall provide all personnel, equipment, and materials to perform full-scale implementation of the Impoundment Basin sludge dewatering.

C. The CONTRACTOR shall dewater sludges in accordance with the construction sequence and schedule included in the SWP and submitted to the OWNER and ENGINEER.

D. The CONTRACTOR shall dewater the sludges within the limits of the impoundment basin as delineated on the Project Drawings.

E. The CONTRACTOR shall ensure control of noxious odors and particulate emissions. The CONTRACTOR in conjunction with the OWNER and ENGINEER shall evaluate the effectiveness of the applied odor control and dust suppression and may require additional action by the CONTRACTOR.

F. The CONTRACTOR shall collect samples of the treated sludge and analyze them for free liquid content by the paint filter test. The samples shall be collected in such a manner that the column of dewatered sludge can be visually assessed and a representative section of the column can be selected for sampling. The CONTRACTOR shall perform paint filter analyses on the samples at the following frequency to confirm that the dewatered sludges meet required specifications:

Parameter	ASTM Test Method	Frequency
Paint Filter Test	SW 846 9095A	As directed, or at a minimum of once for every material load transported offsite.
Toxicity Characteristic	SW	As necessary to complete a waste profile as required by the landfill and as directed.
Percent Solids	ASTM D2216	As directed, or at a minimum of once for every material load transported offsite.

The dewatered sludges shall have met the performance criteria presented in Paragraph 3.03 of this Section.

G. The CONTRACTOR shall provide the results to the OWNER and ENGINEER for review as they are made available. If the dewatered sludges do not meet performance criteria, the CONTRACTOR shall review the procedures with the OWNER and ENGINEER and reprocess the dewatered sludges, as required. Additional samples will be collected, cured, and analyzed for the paint filter test. The OWNER and ENGINEER shall review the results and verify that dewatering of the sludges has been achieved before the CONTRACTOR proceeds to the next area. The reprocessing of the dewatered sludges and testing of additional samples shall be at no additional cost to the OWNER.

3.07 DECONTAMINATION

A. Equipment used for gravity dewatering shall remain dedicated for the duration of these activities and maintained within the exclusion zone.

B. Prior to the demobilization of the equipment, it shall be decontaminated in accordance with the procedures provided in the GDWP.

C. OWNER or its ENGINEER shall be present for decontamination activities and shall be provided copies of all test results necessary to document effectiveness before removing equipment from the site.

D. Decontamination shall be performed at a location designated by the OWNER. If required, a temporary decontamination pad shall be constructed. Liquids will be collected and disposed of at a location designated by the OWNER.

3.08 WATER MANAGEMENT

A. Remove and manage storm and other accumulated water from the basins during in-situ gravity dewatering activities in accordance with the GDWP developed by the CONTRACTOR. Accumulated storm water shall be discharged to the existing facility's industrial sewer (MDEQ Water Pollution Control Permit No. MSP091286).

Sampling will be conducted by OWNER or OWNER's representative.

END OF SECTION

SECTION 02270
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work covered by this Section consists of furnishing all materials, equipment, tools, and labor to construct temporary erosion and sediment control systems.

B. The Work to be performed includes, but is not limited to, sediment control structures (i.e., earthen dam), silt fences, diversion ditches, culverts, sedimentation baffles, and site surface drainage.

C. Maintain temporary erosion and sediment control structures throughout the life of construction activities.

D. Prepare and implement Construction Storm Water Pollution Prevention Plan (SWPPP). Engineer will review and approve prior to implementation.

1.02 SUBMITTALS

A. Product data shall be submitted as indicated in Section 01300 - SUBMITTALS.

PART 2 - PRODUCTS

2.01 SURFACE-WATER CONTROL MATERIALS

A. Silt Fence

CONTRACTOR shall supply silt fence to control surface-water runoff and sediment. Acceptable silt fence material shall be as follows:

- Propex-Silt Shop;
- Mirafi 700X;
- Beltech 755; or
- An approved equal.

CONTRACTOR shall submit manufacturer's product data to the ENGINEER for approval.

B. Straw Bales

CONTRACTOR shall supply straw bales in sufficient quantities to be used for sedimentation control as needed.

PART 3 - EXECUTION

3.01 HANDLING

A. Materials shall be handled in such a manner as to prevent damage to the material. Materials shall not be dropped or dragged over the ground. Any materials damaged shall be replaced at no expense to the OWNER.

3.02 SURFACE-WATER CONTROL STRUCTURES

A. Silt Fence: CONTRACTOR shall install silt fence in accordance with the Specifications and installation instructions provided by the Manufacturer or on the Project Drawings or as directed by the ENGINEER.

3.03 MAINTENANCE

A. Silt fence and other structures will be checked weekly and after each rainfall event.

B. Repairs/replacement will be accomplished as required to keep Silt Fence and other structures in sound condition and function properly.

C. Excavation of trapped sediment will be accomplished to maintain hydraulic control. Sediment will be placed in stockpile area or as directed by ENGINEER.

END OF SECTION

SECTION 02936
SEEDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work covered by this Section includes, but is not limited to, furnishing all equipment, tools, materials, and labor necessary for establishing temporary and permanent vegetative cover, e.g., seeding, fertilizing, and mulching, on all areas as designated by the OWNER.

1.02 REFERENCES

A. The following publications of the issues listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

FEDERAL SPECIFICATION (Fed. Spec.)
O-F-241D Fertilizer, Mixed, Commercial

U.S. DEPARTMENT OF AGRICULTURE
Federal Seed Act of 9 August 1939 (53 Stat. 1275)

Soil Conservation Service (local office)

1.03 GENERAL REQUIREMENTS

A. The specified seed varieties and quantities shall be uniformly distributed over all ground areas disturbed by grading and/or trenching and not otherwise surfaced and in such manner that will produce an even stand of grass over the entire area seeded. The CONTRACTOR shall notify the OWNER at least 10 days prior to seeding operations.

1.04 SOIL TEST

A. The CONTRACTOR shall perform Agricultural Soil Tests to determine fertilizer requirements for permanent seeding. Test reports shall be submitted to the OWNER in accordance with paragraph 1.05 of this Section.

1.05 SUBMITTALS

A. Certificates of Compliance or Reports:

1. Seed;
2. Fertilizer;
3. Lime; and
4. Agricultural Soil Test Report.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. During delivery, seed shall be protected from any drying or contamination by detrimental material.

2. Seeding material shall be inspected upon arrival at the job-site. Unacceptable material shall be immediately removed from the job-site by the CONTRACTOR.

3. Fertilizer shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to state and federal law.

B. Storage

1. Seed and fertilizer shall be stored in cool, dry locations away from contaminants.

2. Materials shall be stored in areas designated or approved by the OWNER.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Seed shall be of the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages of mixtures, purity, germination, weed-seed content, and inert material. Labels shall conform with USDA Federal Seed Act, Rules & Regulations and applicable state seed laws. Wet, moldy, or otherwise damaged seed will be rejected. The CONTRACTOR must contact the local office of the Soil Conservation Service to determine the best seed mixture and application.

B. Fertilizer shall be controlled-release, commercial grade, granular free flowing, uniform in composition, delivered in fully labeled sealed containers, and shall conform to applicable state and federal regulations. Fertilizer shall conform to Fed. Spec. O-F-241, and shall bear the manufacturer's guaranteed statement of analysis. Granular fertilizer shall be in accordance with the nutrient requirements identified by the soil test required in Paragraph 1.04.

C. Topsoil

Specified under Section 02223 BACKFILLING

D. Mulch

1. Straw Mulch shall be stalks from oats, wheat or rye that are free from noxious weeds, mold, or other objectionable material. The straw mulch shall contain at least 50

percent by weight of the material to be 10 inches or longer. Straw shall be in an air-dry condition and suitable for placing with blower equipment.

2. Hydro Mulch Overspray Tackifier, if used, shall be the same as, or equal to, a recycled slick paper (containing wood cellulose and kaolinite clay), shall not contain any growth or germination-inhibiting factors, and shall be dyed an appropriate color to facilitate visual metering during application. Slick paper composition on air-dry weight basis: 8 percent moisture maximum, pH 4.5 - 6.5. When added to water, it shall form a homogenous slurry specifically for use in hydraulic mulching equipment. This material when sprayed on the straw mulch becomes a tackifier/binder and provides a stable bed for seed germination.

E. Water shall be of a quality suitable for irrigation.

PART 3 - EXECUTION

3.01 DATES FOR SEEDING

A. Temporary seeding shall be performed where exposed surfaces are not to be exposed from 30 days to 1 year, or as directed by the OWNER.

B. Permanent seeding shall be performed where exposed soil surfaces are not to be disturbed for greater than 1 year, or as directed by the OWNER, or upon completion of final grading activities.

3.02 PREPARATION OF SEEDBED

A. General

The CONTRACTOR shall place topsoil and establish finish grades.

B. Tillage

The soil shall be tilled to a depth of at least 4 inches by plowing, disking, harrowing, or rototilling. When drought, excessive moisture, or other unsatisfactory conditions prevail, the Work shall be stopped. The soil surface shall be leveled to meet finish grade requirements before seeding. Seedbed preparation shall be performed on the contour to reduce soil loss. On slopes 2 horizontal to 1 vertical (2:1) and steeper, minimum tillage depth shall be 2 inches.

C. Application of Fertilizer and Lime

Fertilizer shall be incorporated into the soil to a depth of 4 to 6 inches during seedbed preparation.

D. Fertilizer and Lime Rate

Fertilizer and lime shall be applied at a minimum of 16 percent nitrogen and 48 percent phosphoric acid or at the rate determined by the results of the CONTRACTOR's Agricultural Soil Test.

3.03 PLANTING SEED

A. Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rains, traffic, or other cause shall be reworked to restore the ground condition previously specified. Seed shall be planted at the rate specified herein.

B. Seed planting shall be accomplished by one of the following methods:

1. Broadcast Seeding

The CONTRACTOR shall broadcast seed by hand or with approved gravity or cyclone types of spreading equipment. Broadcast seedings shall be covered to an average depth of 1/4 inch. Completed seeding shall be mixed into soil with a harrow or rake and compacted with a cultipacker-type roller providing 60 to 90 pounds weight per linear foot of roller, or by equivalent approved hand rolling or compacting methods. Broadcast seeding will not be permitted when wind velocity is such as to prevent uniform seed distribution.

2. Drill Seeding

The CONTRACTOR shall plant seed with a Brillon type grass seed drill equipped with seeding mechanisms, agitator, double disk furrow openers and packer wheels. The seed drill shall plant, cover and compact the seedbed in the same operation. The distance between drill rows shall not be more than 3 to 4 inches apart with planting depth of 1/4 - 1/2 inch. Drill seeding is recommended over broadcast for large areas of seeding.

3. Hydroseeding

If hydroseeding is used and the seed and fertilizer is mixed, they shall be mixed on site and the seeding shall be immediate and without interruption.

C. Mulching

The CONTRACTOR shall perform mulching on the same day as planting seed.

1. Applying Mulch

Straw mulch shall be spread uniformly in a continuous blanket over the seeded areas, using 2 tons of material per acre. The mulch shall be spread in such manner as to prevent bunching.

2. Securing Mulch

Immediately following (the same day) the spreading of the mulch, the material shall be anchored securely to the soil by use of the Hydro Mulch Overspray Tackifier material. The

material shall be applied by a hydroseed blower. The material shall be applied in a raining technique to prevent bunching and displacement of the straw mulch.

3.04 PROTECTION AND CLEANUP

A. After seeding and mulching operations have been completed, barricades and approved warning signs shall be erected by the CONTRACTOR as required to provide protection against traffic and trespass. Excess material from seeding and mulching operations, and all debris, shall be cleaned up and disposed off site.

3.05 ESTABLISHMENT AND MAINTENANCE PERIOD

A. Establishment Period

The CONTRACTOR is responsible for the establishment and maintenance of permanent seeding for a minimum period of 365 days from the date of application.

B. Maintenance Period

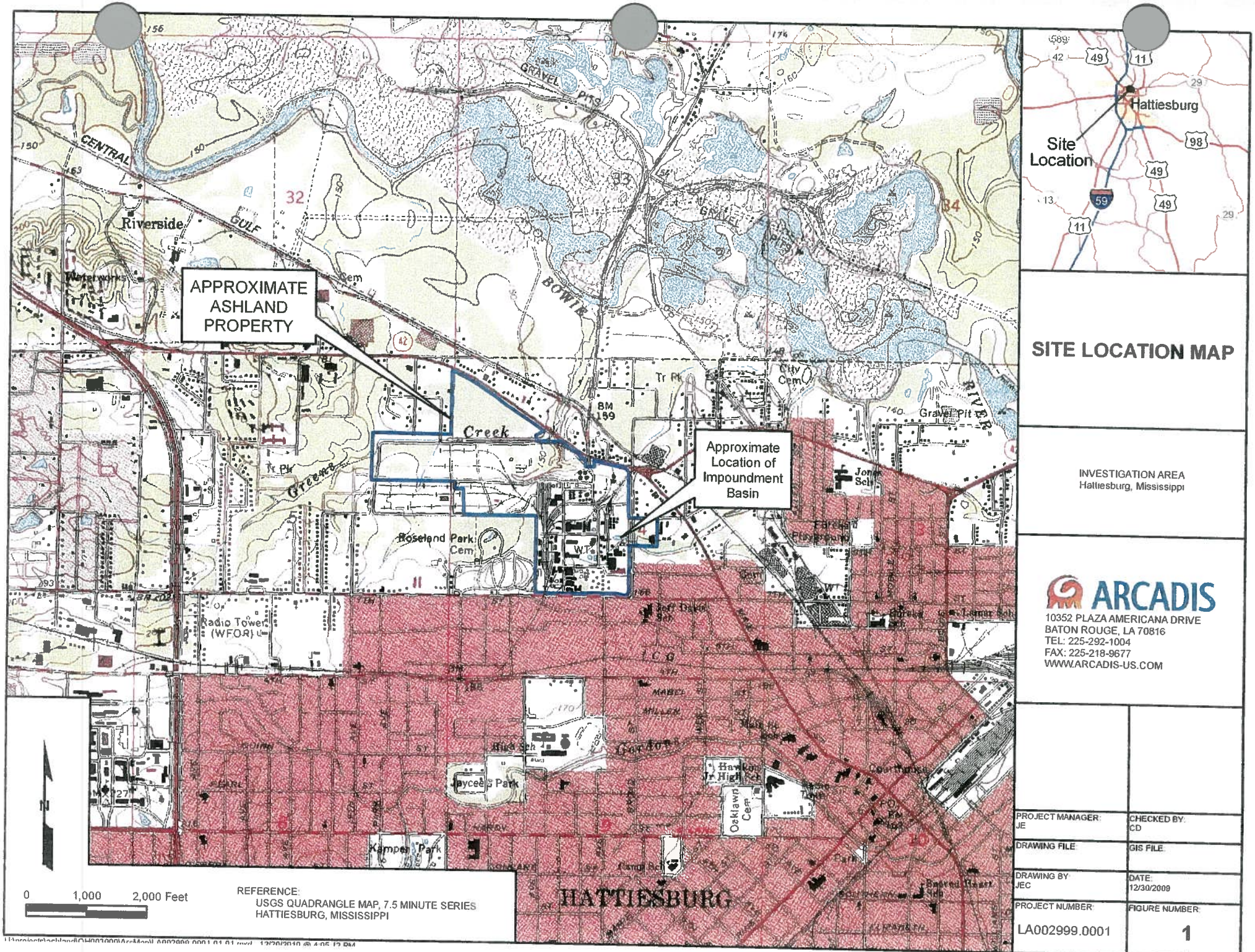
The CONTRACTOR shall be responsible for maintenance of seeding until receiving the Certificate of Final Acceptance. Maintenance activities performed by the CONTRACTOR shall include:

1. Eroded or damaged seeding shall be repaired and reseeded by the CONTRACTOR.

END OF SECTION

EXHIBIT A

Project Drawings



SITE LOCATION MAP

INVESTIGATION AREA
Hattiesburg, Mississippi

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

PROJECT MANAGER: JE	CHECKED BY: CD
DRAWING FILE:	GIS FILE:
DRAWING BY: JEC	DATE: 12/30/2009
PROJECT NUMBER: LA002999.0001	FIGURE NUMBER: 1